Appeal No. 2023-1357

IN THE

UNITED STATES COURT OF APPEALS

FOR THE FEDERAL CIRCUIT

GOOGLE LLC,
Appellant

v.

SONOS, INC.,
Appellee

Appeal from the United States Patent and Trademark Office,
Patent Trial and Appeal Board in No. IPR2021-00962

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May 8, 2023

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Exemplary Claim of U.S. Patent No. 10,140,375

1. A computer-implemented method performed by at least one processor, the computer-implemented method comprising:

identifying a user;

receiving user input from the user through an interface of a client device, the user input indicating a modification to a set of favorite items *for the user*;

in response to receiving the user input: modifying the set of favorite items stored *for the user* in a client-side storage of the client device;

the modification to the set of favorite items initiating a synchronization process to synchronize the set of favorite items modified responsive to the user input with a server-side storage system configured to synchronize favorite items *for the user* with one or more other client devices, the server-side storage system remote from the client-side storage;

presenting through a single interface of the client device, in response to a query from the user, a combined search results set generated via one or more search sub-processes, the combined search results set including at least two of: one or more favorite items from the set of favorite items synchronized *for the user*; one or more search results from a first global index; or one or more search results from a second global index.

Appx74 at 15:49-16:7 (emphases added).

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

CERTIFICATE OF INTEREST

Case Number: 2023-1357

Short Case Caption: Google LLC v. Sonos, Inc.

Filing Party/Entity: Google LLC

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Date: May 8, 2023 Signature: /s/Erika H. Arner

Name: Erika H. Arner

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Provide the full names of all entities represented by undersigned counsel in this case.	Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities. ☒ None/Not Applicable	Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities. ☐ None/Not Applicable
Google LLC		XXVI Holdings Inc.; Alphabet Inc.

☐ Additional pages attached

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☒ Yes (file separate notice; see below) ☐ No ☐ N/A (amicus/movant)

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☒ None/Not Applicable ☐ Additional pages attached

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STATEMENT OF RELATED CASES

Counsel for Appellant Google LLC ("Google") certifies that no other appeal from the same proceeding in the United States Patent and Trademark Office, Patent Trial and Appeal Board ("Board"), is or was previously before this Court or another appellate court, whether under the same or similar title. The Court's decision in this case can affect or be affected by *Google LLC v. Sonos, Inc.*, Case No. 3:20-cv-03845 (N.D. Cal.).

STATEMENT OF JURISDICTION

The Board issued a Final Written Decision in IPR2021-00962 on November 3, 2022. Appx1-59. The Board had subject matter jurisdiction over that *inter partes* review ("IPR") under 35 U.S.C. §§ 6, 318(a). Google timely filed its notice of appeal on January 5, 2023. And this Court has jurisdiction under 28 U.S.C. § 1295(a)(4)(A) and 35 U.S.C. §§ 141(c), 319.

I. PRELIMINARY STATEMENT

Google owns U.S. Patent No. 10,140,375 ("the '375 patent"), which is entitled "Personalized Network Searching." Appx60 at Title. The '375 patent personalizes searches by modifying and synchronizing bookmarks (also called "favorite items") for a specific user, and then searching those bookmarks to provide a search result set that is specific to that user. Fundamental to its purpose of "personaliz[ing] network searching," the '375 patent requires the user to be identified first, before bookmark modification, synchronization, and searching occur. *See* Appx60 at Title; Appx67 at 1:24-27; Appx70 at 7:19-49. This makes sense—without knowing the user for whom modification, synchronization, and searching are intended to occur, modification, synchronization, and searching cannot be personalized for that user.

Sonos filed a Petition challenging claims 1-11 and 13-16 of the '375 patent.[1] It relied on two asserted references: Mendez and Jain. Despite neither disclosing the user-focused network-searching solution from the '375 patent, the Board determined claims 1-11 and 13-16 would have been obvious over Mendez and Jain. The Board's determination is wrong for two reasons.

[1] Sonos also challenged claims 17-20 of the '375 patent, and the Board found those claims unpatentable. *See* Appx2; Appx58. Google is not appealing from the Board's determination with respect to claims 17-20. Sonos did not challenge claim 12 of the '375 patent.

First, the Board erred in construing claims 1-11 and 13-16 to allow the user to be identified at any point in its modification, synchronization, and searching process, and to not require the user to be identified before modification or synchronization occurs. Appx10-15. The plain language of the claims recites a sequence of steps to be performed in order, with "identifying a user" to be performed before modification and synchronization occur. The logical structure of the claims and antecedent basis provided for later claim steps support that sequenced structure. And the specification and purpose of the invention emphasize that a user must be identified first in order for later modification and synchronization to be "for" that user and searching to be "personalized." The Board's construction disregarded this intrinsic evidence, and it failed to give due import to the requirement that "a user" must be identified first. *See* Appx10-15.

Next, substantial evidence does not support the Board's finding that Mendez discloses "identifying a user" first, as required by a proper construction of the claims. Appx22-24. The Board credited Sonos's argument that Mendez discloses identifying a user when it establishes a secure communications link, which occurs at step 730 of Figure 7. Appx23-24. But there is no dispute step 730 is not the *first* step in Mendez's disclosed process—it does not occur before both modification and synchronization. And any suggestion that identifying information must exist on the client device at

some undefined time before step 730 still fails to show Mendez discloses identifying a user specifically before modification, which occurs before step 730 of Figure 7.

The Board also credited Sonos's argument that Mendez discloses this element because it describes appending identifying information to bookmarks. *E.g.*, Appx22-23. But Mendez only discloses appending identifying information to bookmarks that are on the server, not those that are stored locally, as the claims require. Appx74 at 15:49-16:7. Any teaching about information appended on the server does not show that the user is identified locally before bookmark modification and synchronization. It is irrelevant to (and cannot meet) this element. Finally, the Board, in a new theory not raised by either party, found that it would have nevertheless been obvious to a skilled artisan to identify the user before modification and synchronization occur. In the Board's view, identifying the user first (such as at log-on) was "well-known and conventional." Appx21 n.11. But it was error for the Board to make this finding sua sponte for the first time in a Final Written Decision. Moreover, there is no evidence, much less substantial evidence of record, to support this finding.

For these reasons, Google respectfully requests this Court reverse the Board's determination that claims 1-11 and 13-16 are unpatentable.

II. STATEMENT OF THE ISSUES

1. Claim limitations must be construed consistent with the plain language of the claims and the patent specification, including its description of the purpose of

the invention. The '375 patent personalizes network searching by identifying a user before modifying and synchronizing bookmarks (favorite items) stored for that user. Whether the Board erred in ignoring the plain claim language and the purpose of the invention articulated in the specification when it construed claims 1-11 and 13-16 to allow modifying and synchronizing bookmarks before a corresponding user has been identified.

2. When properly construed, claims 1-11 and 13-16 require identifying a user before modifying and synchronizing bookmarks. Whether the Board's finding that Mendez discloses or renders obvious "identifying a user," despite Mendez only disclosing identifying the user *after* modification and synchronization of workspace elements, is supported by substantial evidence.

III. STATEMENT OF THE CASE

A. The '375 Patent Is User-Centric: It "Personalize[s] Network Searching" By "Identifying a User" Before Modifying and Synchronizing Bookmarks for That User

The '375 patent relates to "[p]ersonalized network searching" that generates "a personalized search result" for a user. Appx60 at Title, Abstract; Appx67 at 1:24-27. The '375 patent explains that when a user visits a webpage, the visit is most often a "revisit[]," that is, "the user is returning to a web page previously visited." Appx67 at 1:31-33. Before the '375 patent, users would use search engines "for navigating to [these] often-visited sites." Appx67 at 1:33-36. Specifically, search engines would

"perform[] [a] search based on a conventional search method," and "users [would] learn which queries [would] take them to their favorite sites" and use those queries to return to their favorite sites. Appx67 at 1:36-45. The '375 patent discloses that "bookmarks" (or favorite items) were also a "valuable" way for a user to navigate to a site that search engines did "not rank highly" or that was "otherwise hard to find" using conventional search engine methods. *See, e.g.*, Appx67 at 1:45-51; Appx68 at 4:51-55.

While recognizing the value of bookmarks, the '375 patent explains that users "ha[d] difficulty propagating bookmarks between the various machines on which the user depends," such as, propagating between home and office computers. Appx67 at 1:51-56. To propagate between "various machines," users would have to "manually synchronize [their] bookmark lists" between multiple machines or use "conventional methods of organizing bookmarks," which "were limited at best." Appx67 at 1:56-60. According to the '375 patent, these limitations made it "difficult for the user to find a favorite site." *Id.*

Although some solutions were available to help users propagate bookmarks between devices, like "storing the bookmarks on-line," those solutions suffered from the "organizational problems inherent in conventional bookmarks"—they could not leverage any "user[] preferences to provide personalized search results." Appx67 at 1:61-2:19.

The '375 patent remedied these problems by offering "an improved system and method for providing personalized network searching" that allowed for a user's organization of and access to bookmarks (favorite items) across multiple devices and use of those bookmarks to generate personalized search results. Appx67 at 2:17-21; Appx67-68 at 2:61-3:3. This improved system for personalizing network searching is shown in Figure 1:

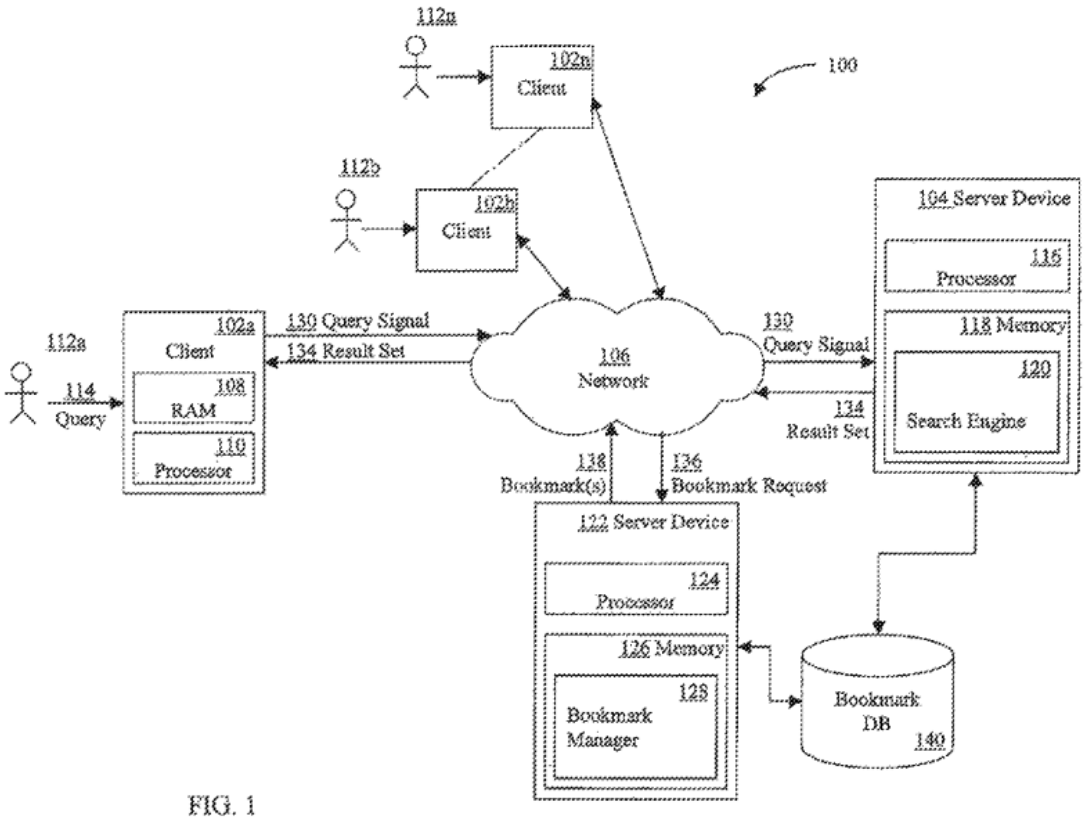


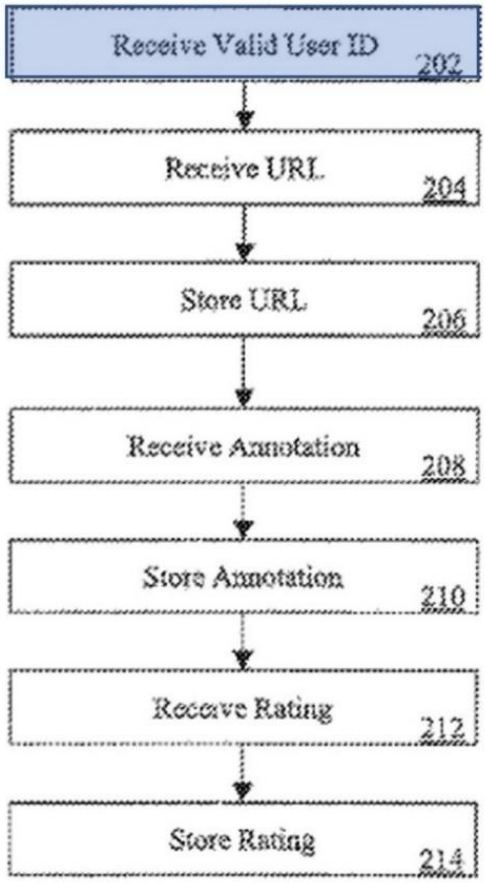
FIG. 1

Appx63 at Fig. 1; Appx68 at 3:4-7; Appx67 at 2:25-26, 2:61-62; Appx74 at 15:19-30. As shown, the system includes users (112a-n) residing at their respective client devices (102a-n). Appx68 at 3:8-64. The client devices include personal computers,

mobile phones, and similar devices, and they communicate with server devices (122 and 104) over a network like the Internet (106). Appx68 at 3:8-61, 4:55-64.

Server device 122 includes a memory 126 that contains a bookmark manager application program (a bookmark manager). Appx68-69 at 4:55-5:3. The bookmark manager has "an interface so that a user 112a may manage bookmarks on the server." Appx69 at 5:4-6. This interface can be a "browser-based application that allows the user to create, modify, delete, and save bookmarks on the network" like in bookmark database 140. Appx69 at 5:6-12. In this way, a user can track "conventional browser bookmarks using server-side storage," and the user's bookmarks can be available "to the user on all the various computers [that] the user uses." Appx69 at 5:34-43.

The '375 patent's improved method is illustrated in part in Figure 2. Figure 2 and its associated description show how a user who wants to synchronize bookmarks on different devices is identified and able to store and modify bookmark information:



Appx64 at Fig. 2 (annotated); Appx70 at 7:19-42. As shown above in step 202, the '375 patent's disclosed method requires *first* identifying a user, which occurs when "the bookmark manager 128 *first* receives a valid user identifier." Appx70 at 7:36-49 (emphasis added). Identification must happen before bookmark modification and synchronization because, as the '375 patent explains, users "who desire [bookmark] synchronization across different [client devices,] or other types of personalization[,] *need to identify themselves to the bookmark manager*" so that the bookmark manager "has a primary key with which to store [the] user's bookmarks." Appx70 at 7:36-42 (emphasis added).

After the user is identified, the '375 patent explains the "bookmark manager 128 *then* receives the URL for the site[s] that the user identifies" and wants to store (and modify) as a bookmark. Appx70 at 7:50-53 (emphasis added). This can be done explicitly by the user or implicitly based on user behavior, such as the time spent on a site, repeat visits, or the number of click throughs. Appx69-70 at 6:60-7:1. This is shown with step 204 in Figure 2 above. Appx70 at 7:50-51; *see also* Appx64 at Fig. 2. The bookmark manager stores the URL for the identified user with annotations or ratings it has also received from that user "for later retrieval." Appx70 at 7:51-8:40.

Figure 3 and its accompanying description then explain how the synchronized bookmarks can be used to provide personalized network searching:

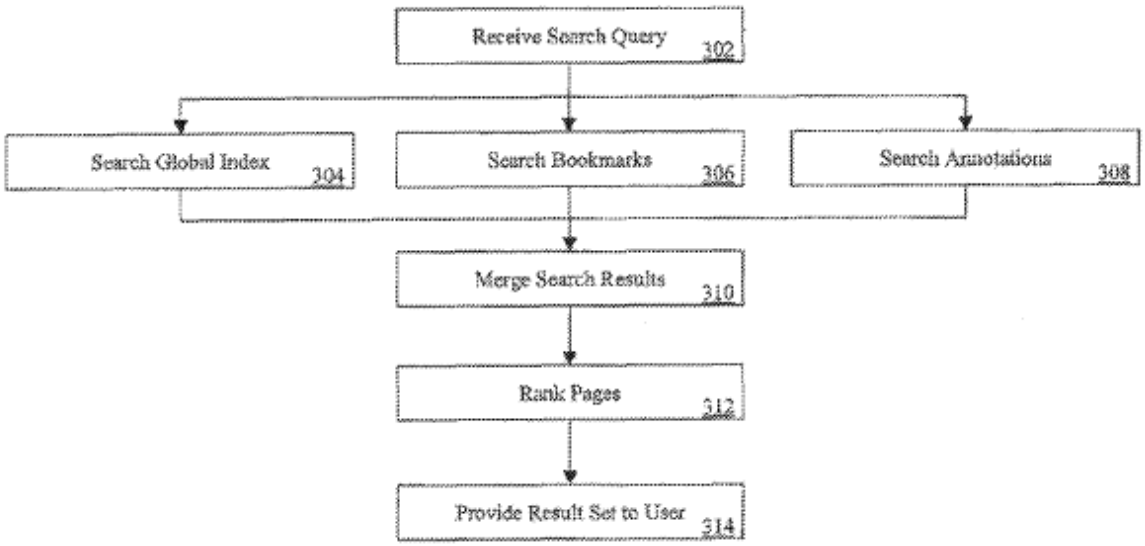


FIG. 3

Appx65 at Fig. 3; Appx70 at 8:44-60. For example, when a search query is received, the search engine responds by searching global indices (like a conventional search) and the user's stored bookmarks and their annotations. Appx70-71 at 8:46-9:30. This "enables the search provider to personalize the search for [a user]." Appx74 at 15:31-40.

This improved system and method are reflected in the claims. For the purposes of this appeal, independent claim 1 is representative and reproduced below:

> 1. [1-pre] A computer-implemented method performed by at least one processor, the computer-implemented method comprising:
>
> [1-1] *identifying a user*;
>
> [1-2] receiving user input from the user through an interface of a client device, the user input indicating a modification to a set of favorite items *for the user*;
>
> [1-3] in response to receiving the user input: modifying the set of favorite items stored *for the user* in a client-side storage of the client device;
>
> [1-4] the modification to the set of favorite items initiating a synchronization process to synchronize the set of favorite items modified responsive to the user input with a server-side storage system configured to synchronize favorite items *for the user* with one or more other client devices, the server-side storage system remote from the client-side storage; and
>
> [1-5] presenting through a single interface of the client device, in response to a query from the user, a combined search results set generated via one or more search sub-processes, the combined search results set including at least two of: one or more favorite items from the set of favorite items synchronized *for the user*; one or more search results from a first global index; or one or more search results from a second global index.

Appx74 at 15:49-16:7 (emphases added). Claims 2-11 and 13-16 depend directly or indirectly from claim 1 and require the same method steps. *E.g.*, Appx74 at 16:8-57; Appx74-75 at 16:61-17:17.

B. Mendez Does Not Disclose Personalized Network Searching nor Does It Identify Any User Before Its Bookmark Modification and Synchronization Occur

Sonos and the Board relied exclusively on Mendez[2] for teaching steps [1-1] through [1-4], which relate to identifying the user, and modifying and synchronizing bookmarks stored for that user. *See, e.g.*, Appx237-246; Appx20-32. Yet unlike the '375 patent, Mendez is not user-focused. Its device-centric solution only focuses on consistency across workspaces, and as such, it is not concerned with identifying the user before modification and synchronization.

Mendez focuses on alleviating "[t]he problem of data inconsistency . . . when multiple copies of a document are maintained at different network locations," and/or those documents "us[e] application programs from different vendors." Appx1525 at 1:24-56. In one example, Mendez discloses a home computer and a work computer using different browser applications and thus two different bookmark formats, which can lead to inconsistent bookmark storage across the two devices. Appx1525 at 1:41-52. To solve this problem, Mendez provides "a global translator [that] automatically

[2] U.S. Patent No. 6,023,708 ("Mendez"). Appx1516-1596.

synchronize[s] multiple copies of a workspace element [that may be] across different formats between multiple sites in a secure network environment." *See* Appx1516 at Abstract; Appx1525 at 1:19-22, 1:59-2:2. The workspace elements (workspace data) include an e-mail folder, file folder, calendar folder, or bookmark folder. Appx1526 at 3:13-29.

As shown in Figure 1, reproduced below, Mendez discloses a "secure network environment," including a "global server connected to multiple clients," like remote terminal 102 and desktop computer 134. Appx1525-1526 at 1:59-63, 2:62-3:10.

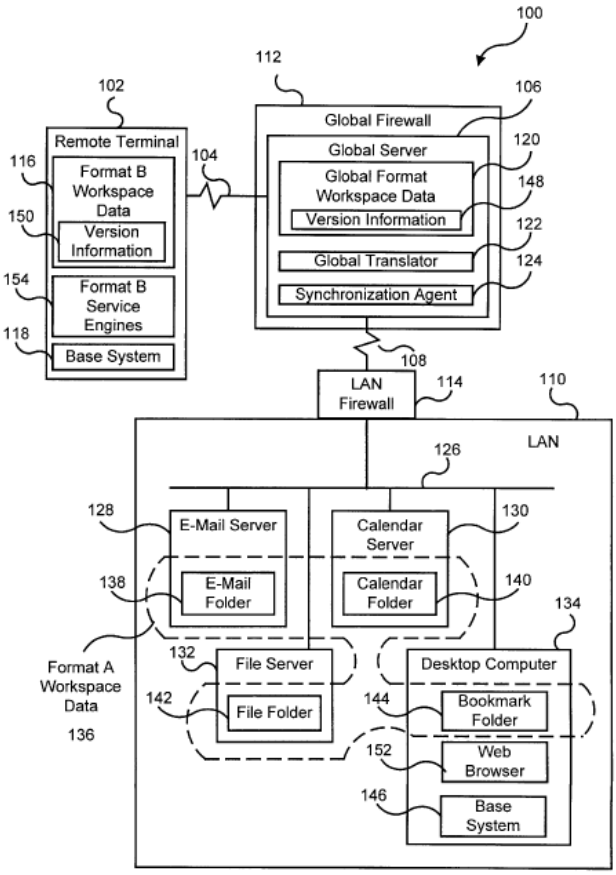


FIG. 1

Appx1518 at Fig. 1; Appx1525-1526 at 2:62-3:3.

The clients each store workspace elements; and the global server has a "synchronization means for synchronizing" the workspace elements stored on the devices and "a translator for translating between the first format and the second format" when elements on the devices are in different formats. Appx1525 at 1:59-2:10. To aid in this translation and synchronization, the global server maintains a copy of workspace elements in a global format. Appx1526 at 4:11-22. The global format includes information from the first and second formats, and the information needed for synchronization, like user identification information. Appx1528 at 8:47-62. Mendez's synchronization could occur by "user request" or at "predetermined times during the day." Appx1525 at 2:18-40.

As discussed above, Mendez synchronizes locally stored workspace elements across multiple devices using a server that stores copies of these workspace elements in a global format. Appx1526 at 3:4-41, 4:11-22. Figure 7 shows the synchronization process:

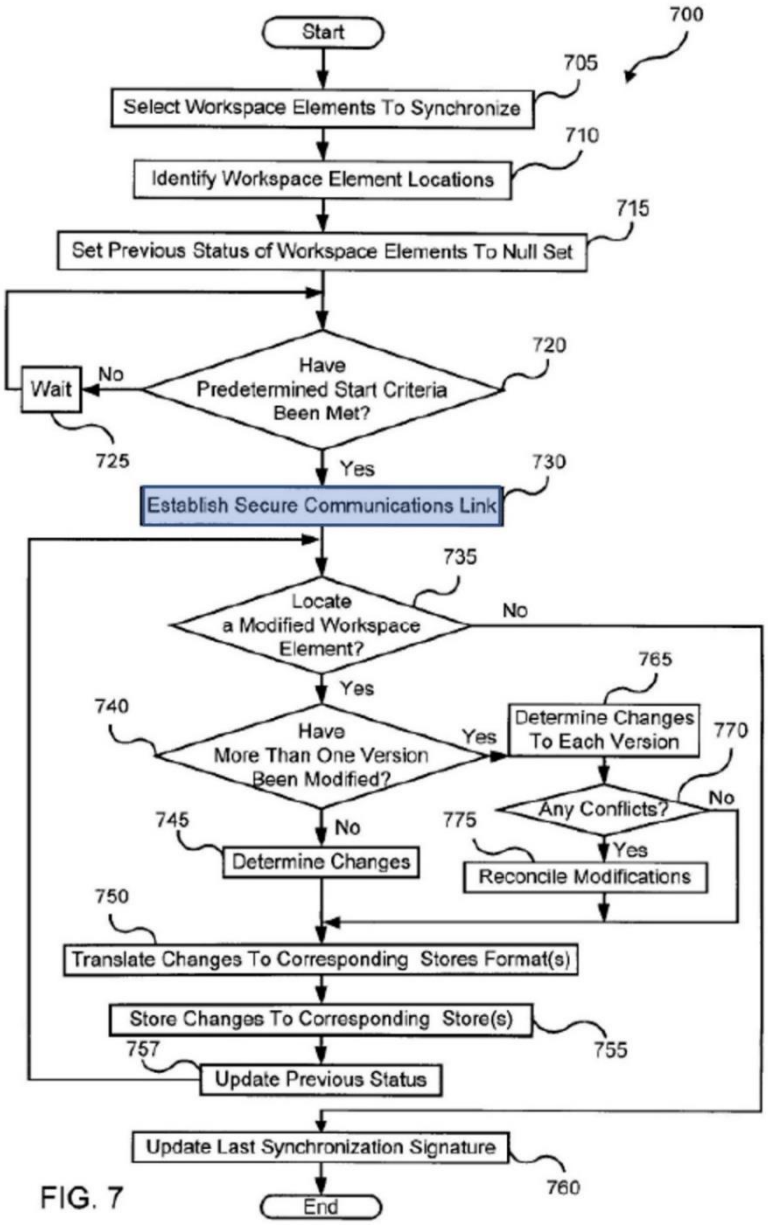


FIG. 7

Appx1524 at Fig. 7 (annotated).

Before the synchronization process in Figure 7 begins, the user modifies and stores the workspace elements that will be synchronized. Appx1526 at 3:4-41, 4:11-22. Then, the synchronization process of Figure 7 begins and does so "with the user interface modules 410 in step 705 enabling a user to select workspace elements of

workspace data" the user previously modified locally and wants to synchronize with the server and other devices. Appx1528-1529 at 8:63-9:10; Appx1525-1526 at 2:65-3:02. Locator modules then identify locations (step 710) where workspace elements are stored. Appx1529 at 9:2-17.

After workspace elements are identified, Mendez discloses a synchronization start module to assess if "predetermined criteria have been met[,] which indicate that synchronization of the workspace elements selected in step 705 should start" (step 720). Appx1529 at 9:18-25. If those "predetermined criteria" are met (step 720), the process proceeds to step 730, where a secure communications channel is established between the client device(s) and global server. Appx1529 at 9:23-25. Establishing a secure communication channel through a global firewall includes executing routines for "user identification and authentication." Appx1527 at 6:30-35; Appx238. After user identification and authentication at step 730, the client device(s) and the global server "determine whether any workspace elements have been modified." Appx1529 at 9:26-55. If workspace elements "have been modified," then "outdated workspace element[s]" on the global server and client device(s) are updated, and any differences are reconciled. Appx1529 at 9:55-10:35.

C. The *Inter Partes* Review and the Board's Final Written Decision

Relevant to this appeal, Sonos filed a Petition challenging claims 1-11 and 13-16 based on the combination of Mendez and Jain. *See* Appx6-7. The parties disputed

several issues, including whether (1) these claims require "identifying a user" *before* bookmark modification and synchronization; and (2) Mendez discloses "identifying a user" first, under a proper construction. *See*, *e.g.*, Appx388-400; Appx1983-1994; Appx475-484. After briefing and an oral hearing, the Board issued a Final Written Decision finding claims 1-11 and 13-16 unpatentable. It made two determinations relevant to this appeal.

1. The Board Construed Claims 1-11 and 13-16 to Not Require Identifying a User Before Modification and Synchronization of Bookmarks

First, the Board rejected Google's proposed construction that the first step of independent claim 1 ("identifying a user") must be performed before the other steps. Appx10-14. It instead held the claims do not require the user to be identified before any remaining steps occur. Appx10-15. The Board acknowledged that the "first step of claim 1 recites 'identifying a user,'" and that the later steps refer to "the user," but the Board held this use of antecedent basis did not support requiring the first step to occur before the later steps since the later steps only recite "the user" instead of "the identified user." Appx14-15. The Board required an additional "identified" moniker, but it did not explain what "the user" in subsequent limitations would refer to if not the user identified in the "first step of claim 1." Appx14-15; *see also* Appx11.

The Board also found that "logic does not dictate" that "identifying a user" in step [1-1] must be performed before receiving user input in step [1-2] or presenting

search results in step [1-5]. Appx11-12. As to step [1-2], the Board explained it did "not see how or why logic dictates 'identifying the user' before user input modifying a locally stored set of bookmarks is received." Appx11 (cleaned up). Likewise, the Board explained step [1-5] does not have to occur after the user is identified because the claimed search results can be presented just from global indices without relying on the bookmarks stored for the user in steps [1-2] to [1-4]. Appx12. In its view, step [1-5] could stand alone, and that was enough to find the claims do not require a user to be identified before presenting combined search results. Appx11-12.

Turning to the '375 patent's specification, the Board agreed with Google that Figure 2 shows the user being identified before "the other steps." Appx12-13. But the Board reasoned this did not support requiring the "identifying a user" step to be performed first because Figure 2 depicted an exemplary embodiment. Appx12-13. In finding Figure 2 depicted an exemplary embodiment, the Board rejected Google's proposed construction as limiting the claims to only that embodiment. Appx12-13. It did not, however, identify *any* embodiment where a user was identified after the creation and synchronization of bookmarks. Appx12-13.

The Board then rejected Google's argument that the purpose of the invention (personalized network searching) supported Google's construction. Appx13-14. In the Board's view, the '375 patent discloses several ways for a bookmark manager to identify a user—including a cookie on the client or an IP address tracked throughout

a session—and the specification indicates that user identification is only required "to some extent." Appx13-14. Without explaining how "to some extent" informs *when* identification must occur (much less explaining how it undermines a suggestion that the user must be identified before modification and storage), the Board reasoned that the disclosure of a cookie or IP address meant that (1) device-identifying information could be used, (2) identifying a user was not a core feature, and (3) identifying a user is not needed to perform the other claimed steps (including modification and storage of bookmarks). *See* Appx13-14.

2. The Board Then Found that Mendez Discloses "Identifying a User"

Second, the Board found that Mendez discloses "identifying a user." Appx20-24. Starting with its construction that did not require "identifying a user" before other claim steps, the Board found that step 730 from Mendez's synchronization process—establishing a secure communication link—met this limitation. Appx20. The Board credited Sonos's argument that a user is identified when user information is relayed to the server to establish that secure communication link. Appx20 (citing Appx237-238). Under its proposed construction, the Board did not have to address the fact that step 730 of Mendez occurs *after* a user has selected workplace elements and started the synchronization process. *E.g.*, Appx20.

The Board then addressed the "identifying a user" limitation under Google's construction: requiring the user to be identified before bookmarks are modified and

synchronized. Appx20-23. It found that Mendez discloses this limitation even under Google's proposed construction. Appx20-23. Its reasoning was three-fold. First, the Board found establishing a secure communication link in step 730 describes relaying user information to the server, and in order to relay that information, the user would have already been identified before step 730. Appx23-24. Second, the Board found identifying information could be appended to server side bookmarks, showing that any identification must occur before bookmark modification and storage. Appx22-23. Third, the Board reasoned, even if Mendez does not expressly disclose this under Google's construction, a skilled artisan would have still "recognized that it was well-known and conventional to identify a user as a first step in a computer-implemented method[,] such as that of claim 1[,] by, for example, requiring the user to input log-in credentials." Appx21 n.11 (cleaned up); Appx21-23. The Board found this aligned with Mendez's disclosure in Figure 7 (and step 730), for step 730 illustrates that user information is sent to the server, confirming user information was already acquired in a prior step. Appx23-24.

IV. SUMMARY OF THE ARGUMENT

This Court should reverse the Board's decision finding claims 1-11 and 13-16 of the '375 patent unpatentable for two reasons. First, the Board misconstrued claims 1-11 and 13-16 and incorrectly held they do not require a user to be identified before the remaining steps occur. The plain claim language requires the "identifying a user"

step to be performed first because subsequent steps recite actions that are taken *after* the user is identified. This is reinforced by the antecedent basis in steps [1-2] through [1-5] that requires steps to be performed "*for the user*" that was earlier identified in step [1-1]. Indeed, Sonos admitted, and the Board recognized, that steps [1-2] to [1-4] must be performed in order, but the Board erred in treating step [1-1] differently than the rest of the claim.

The Board also misinterpreted Google's argument regarding Figure 2 of the '375 patent as reading in a limitation from the specification. Google's argument was that the specification, including its figures and disclosed purpose, consistently and uniformly reinforce the plain claim language and show that a user must be identified first. Neither the Board nor Sonos has identified a single embodiment where the user is not identified first, confirming that Google's plain-meaning interpretation of claim 1 is the right one.

Second, substantial evidence does not support finding that Mendez discloses "identifying a user" under a correct construction. The Board accepted that Mendez's step 730 (establishing a secure communication channel) teaches "identifying a user." But step 730 occurs after bookmarks are modified and synchronization has started. The Board also erred in finding Mendez discloses identifying a user before creation and synchronization because user identification information can be appended to each bookmark on the server. This is irrelevant to claims 1-11 and 13-16, because it

describes modifying bookmarks stored on the *server*, whereas the claims require the user to be identified before modifying bookmarks stored on the *client*. This disclosure cannot provide substantial evidence to support the Board's finding. Finally, the Board erred by introducing a new, unsupported obviousness argument that a skilled artisan would have found it obvious to identify the user before any other steps in Mendez's process. The parties did not argue such a position, and the Board cited no evidence to support this new finding.

Google respectfully requests that this Court reverse the Board's Final Written Decision and its determination that claims 1-11 and 13-16 would have been obvious.

V. ARGUMENT

A. Standard of Review

This Court reviews claim construction de novo, and to the extent necessary to construe claim terms, it reviews any underlying factual findings involving extrinsic evidence for substantial evidence. *Paice LLC v. Ford Motor Co.*, 881 F.3d 894, 902 (Fed. Cir. 2018) (citing *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 574 U.S. 318, 332-33 (2015)).

Obviousness is a legal question reviewed de novo, with any underlying factual findings, such as what the reference teaches, reviewed for substantial evidence. *E.g.*, *In re Baxter Int'l, Inc.*, 678 F.3d 1357, 1361 (Fed. Cir. 2012); *In re Elsner*, 381 F.3d 1125, 1127 (Fed. Cir. 2004); *In re Gartside*, 203 F.3d 1305, 1316 (Fed. Cir. 2000).

Substantial evidence is "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *Consol. Edison Co. of N.Y. v. NLRB*, 305 U.S. 197, 229 (1938).

B. The Board Erred in Construing the Claims to Allow User Identification to Happen at Any Point in the Claimed Process

The claims require identifying a user first, before bookmark modification and synchronization. Appx74 at 15:49-16:7 (claim 1). It is well established that "a claim 'requires an ordering of steps when the claim language, as a matter of logic or grammar, requires that the steps be performed in the order [they are] written, or the specification directly or implicitly requires' an order of steps." *Mformation Techs., Inc. v. Rsch. in Motion Ltd.*, 764 F.3d 1392, 1398-99 (Fed. Cir. 2014) (quoting *TALtech Ltd. v. Esquel Apparel, Inc.*, 279 F. App'x 974, 978 (Fed. Cir. 2008)). Here, the claims' logical progression and their use of antecedent basis—where the user is identified first, and the remaining steps are performed *for that user*—require the user to be identified first. Appx74 at 15:49-16:7 (claim 1). The specification supports this straightforward understanding. Its embodiments identify the user first to achieve the purpose of the '375 patent's invention—personalized network searching. If the user is not identified before modification or synchronization, user identification becomes irrelevant to the claimed process. The Board's contrary construction disregards this intrinsic evidence and should be rejected.

1. The Plain Claim Language Requires Identifying the User First

The "logic [and] grammar" of the claims require identifying a user (step [1-1]) before the remaining steps occur. *Mformation*, 764 F.3d at 1398-99. Claim 1 makes sense only if its steps are performed in order. Step [1-1] requires "identifying a user." And then steps [1-2] through [1-5] recite subsequent actions taken for that same user identified in step [1-1]:

- [1-2]: "receiving input *from the user* . . . indicating a modification to a set of favorite items *for the user*";
- [1-3]: "modifying the set of favorite items stored *for the user*";
- [1-4]: "synchroniz[ing] the set of favorite items modified responsive to the user input with a server-side system configured to synchronize favorite items *for the user* with one or more other client devices"; and
- [1-5]: "presenting . . . a combined search results set . . . including . . . one or more favorite items from the set of *favorite items synchronized for the user*."

Appx74 at 15:49-16:7 (emphases added). Steps [1-2] through [1-5] rely upon a user being identified at step [1-1]. Appx389-394; Appx1983-1988 (¶¶ 34-41). Indeed, it would not be possible to "modify[] the set of favorite items stored *for the user*" (step [1-3]) or synchronize "favorite items *for the user*" (step [1-4]) unless and until that user has been identified, as required in step [1-1]. If the user is not identified before

favorite items are modified, stored, or synchronized, then these later actions cannot be performed "for the user," and the '375 patent's claimed purpose of personalized network searching is never realized.

Claim 1's grammatical structure confirms this logical reading. Specifically, as shown above, each of steps [1-2] through [1-5] refers back to the user first identified in step [1-1] by using antecedent basis in the phrase "for *the user*." Appx1988 (¶ 40) (emphasis added).

The Court has repeatedly found logical progression and grammatical structure similar to that in claim 1 require method claims to be performed in a particular order. For example, in *Mantech Environmental Corp. v. Hudson Environmental Services, Inc.*, the Court construed claim steps to be performed in order because earlier steps introduced terms and results that were referred to in subsequent steps. *See* 152 F.3d 1368, 1375-76 (Fed. Cir. 1998). The Court held "the sequential nature of the claim steps is apparent from the plain meaning of the claim language." *Id.* The same is true of claim 1 here, which recites a sequential process of *first* identifying a user and *then* performing subsequent steps for that user who has already been identified. Appx74 at 15:49-16:7.

Likewise, in *Mformation*, the Court construed a software claim that recited both "establishing a connection between [a] wireless device and [a] server," and then "transmitting [data] from the server to the wireless device," to require the connection

be established before transmission. *See* 764 F.3d at 1394, 1399 (citation omitted). In doing so, the Court noted the establishing-the-connection step would be superfluous if it did not occur *before* the data was transmitted. *Id.* at 1399; *see also Function Media, L.L.C. v. Google Inc.*, 708 F.3d 1310, 1319-21 (Fed. Cir. 2013) (concluding claim reciting "creating" and "processing" an "electronic advertisement" necessarily indicates "creation of the ad must happen before the processing begins"). The same reasoning applies here: steps [1-2] through [1-5] each refer back to the user identified in step [1-1], and the user identification step would be superfluous if it did not have to be performed before these subsequent steps.

Sonos even conceded steps [1-2] through [1-4] of claim 1 must be performed in order, but then it argued that step [1-1] does not need to occur first. Appx444-445 ("claim 1 does arguably require that steps [1-3]-[1-4] be performed after [1-2]"). The Board erred by agreeing with Sonos that step [1-1] should be treated differently than admittedly ordered steps [1-2] through [1-4]. Appx11 (citing Appx444-445). In this sense, this case is aligned with the Court's decision in *Hytera Communications Co. v. Motorola Solutions, Inc.*, 841 F. App'x 210, 218 (Fed. Cir. 2021). In that case, the parties agreed that four of five steps in a method claim must be performed in order but disputed whether the remaining claim step must likewise be performed in order. *Id.* The Court required *all five* steps to be performed in order because "as a matter of logic, we reject Hytera's position that we should construe claim 7 as requiring four

of its five steps to be performed in the order they are written, but we should disregard the antecedent basis in the 'preparing' step and allow that one step to be performed out of order." *Id.* Yet that is precisely what the Board did here—treating step [1-1] differently than admittedly ordered steps [1-2] through [1-4], despite the admittedly ordered steps [1-2] through [1-4] relying on step [1-1] for antecedent basis.

In addition to its opinion in *Hytera*, the Court has repeatedly reasoned that the ordering of other steps in a method claim supports requiring surrounding steps to be performed in order as well. For example, in *Mformation*, the Court confirmed the "establishing a connection" step must occur before the "transmitting" step because "other sub-steps in claim 1 inherently require an order-of-steps." 764 F.3d at 1399-400. Likewise, in *Amgen Inc. v. Sandoz Inc.*, the Court based its conclusion that steps (f) and (g) had to be performed in sequence because step (a) "obviously must occur before" step (b). 923 F.3d 1023, 1028 (Fed. Cir. 2019), *modified other grounds by* 776 F. App'x 707 (Fed. Cir. 2019). The Court should apply that same reasoning here and recognize that the logic and grammar of claims 1-11 and 13-16 require the steps to be performed in order, with the user being identified first. Appx74 at 15:49-16:7.

Finally, the Board improperly discounted the use of antecedent basis because it reasoned that for claim steps to imply an order, subsequent steps needed to recite "the identified user" instead of "the user." Appx14-15. The Board's logic is flawed because each instance of "the user" undisputedly refers back to the "user" identified

in step [1-1], regardless of whether the "identified" moniker is also used, supporting the construction that step [1-1] must be performed first. *Hytera*, 841 F. App'x at 218 ("[T]hat the 'determining' step says 'the' when it could have said 'a' reinforces our conclusion that it is meant to come after the 'preparing' step."). The Board never explained what "the user" would refer to if not to the user identified at step [1-1]. Appx14-15. The plain claim language supports finding the claims require identifying the user before the rest of the steps are performed.

2. The Specification Likewise Confirms that the Claims Require Identifying the User First, Before Bookmark Modification and Synchronization

In addition to considering logic and grammar, the Court considers whether the "'specification directly or implicitly requires' an order" for claim elements. *See, e.g.*, *Mformation*, 764 F.3d at 1398-99 (citation omitted). Here, the specification confirms what the claims on their face make clear—users "first . . . need to identify themselves to the bookmark manager" before modifying and synchronizing the bookmarks, and identification must occur first "so that the bookmark manager . . . has a primary key with which to store a user's bookmarks." Appx70 at 7:36-42. The very purpose of personalizing network searching "for the user" cannot be achieved unless the user is first identified.

The specification "is always highly relevant to the claim construction analysis. Usually, it is dispositive" of claim construction issues. *Phillips v. AWH Corp.*, 415

F.3d 1303, 1315 (Fed. Cir. 2005) (en banc). In particular, a "patent's statement of the described invention's purpose informs the proper construction of claim terms." *Kaken Pharm. Co. v. Iancu*, 952 F.3d 1346, 1352 (Fed. Cir. 2020); *see also Sequoia Tech., LLC v. Dell, Inc.*, Nos. 2021-2263, 2021-2264, 2021-2265, 2021-2266, 2021-2267, 2023 WL 2903684, at *6 (Fed. Cir. Apr. 12, 2023) (explaining that a patent's express purpose informs the proper construction of a term).

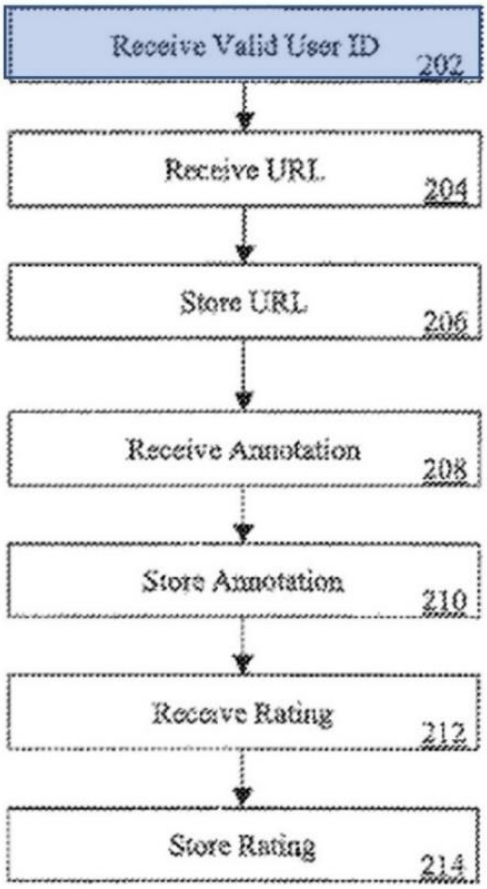
As the '375 patent's title shows, its very purpose is to "Personalize[] Network Searching." Appx60 at Title. As discussed in Section III.A, the Background of the '375 patent explains it is well known that, before the '375 patent, "bookmarks" (or favorite items) provided benefits to users but were difficult to synchronize between multiple devices. Appx67 at 1:45-2:5. While tools existed to help users propagate bookmarks between devices, the prior art could not "leverage the user's preferences to provide personalized search results." Appx67 at 2:6-19. As such, the '375 patent sought to offer "an improved system and method for providing personalized network searching." Appx67 at 2:20-21. The Abstract and Summary of the Invention sections reinforce this guiding purpose. *E.g.*, Appx60 at Abstract; Appx67 at 2:25-37.

This personalized network searching cannot be accomplished unless the user is identified as the *first step* in the process. *See supra* Section III.A; *see, e.g.*, Appx67 at 2:25-37. As Google and its expert (Dr. Madisetti) explained, the invention stores bookmarks (or favorite items) locally on a client device. *See, e.g.*, Appx70 at 7:19-

21; Appx64 at Fig. 2; Appx386-387; Appx1981 (¶ 29). The bookmarks can be added explicitly, by the user adding the bookmarks themselves, or implicitly based on user behavior, like time on a site, number of repeat visits, or number of click-throughs. *See, e.g.*, Appx69-70 at 6:60-7:1; Appx387; Appx1981 (¶ 29). The '375 patent then describes searching bookmarks and the Web to return a search result set. *See, e.g.*, Appx69 at 5:16-25; Appx388; Appx1982 (¶ 31). For this storage and searching to be personalized for a user, the user must be identified first. Appx1986-1987 (¶ 38). If the user is not identified, stored bookmarks are not tethered to that user and later searching is not of that user's bookmarks (there is no modification, synchronization, or searching for the user). *Id.* Without first identifying the user, the personalized and user-specific network searching contemplated by the '375 patent cannot occur. *Id.*

Figure 2 of the '375 patent and its surrounding disclosures clearly depict this requirement of identifying the user first to achieve personalized network searching. Appx64 at Fig. 2. In its discussion of Figure 2, the '375 patent explains that "the bookmark manager 128 *first* receives a valid user identifier (ID) 202 from the client 102a." Appx70 at 7:36-38 (emphasis added). The specification then explains this must happen "*first*" because the "[u]sers who desire synchronization across different browsers/computers or other types of personalization *need to identify themselves* to the bookmark manager . . . so that the bookmark manager 128 has a primary key with which to store th[at] user's bookmarks." Appx70 at 7:36-42 (emphases added).

It is only after identification occurs that "[t]he bookmark manager 128 *then* receives" bookmark modification information from that user. Appx70 at 7:50-65 (emphasis added). Figure 2 illustrates this visually, showing the user identification step (202) occurs before URL selection, annotation, rating, and related storage (steps 204-214):



Appx64 at Fig. 2 (annotated); *see also* Appx391; Appx70 at 7:19-8:40; Appx1985-1986 (¶ 37).

The Board erred in discounting Figure 2's description of identifying the user first, reasoning that the specification described Figure 2 as "merely exemplary" and

not limiting. Appx12-13 (citing Appx69 at 5:32; Appx70 at 8:32; Appx 74 at 15:41-44). In doing so, the Board misinterpreted Google's argument as allegedly reading in a limitation from the specification. Appx12-13. Instead, Google's argument is that the disclosed embodiment *supports what is clear from the plain language*—that the user is identified *before* the remaining steps are performed. Tellingly, the Board did not point to any embodiment where the user is identified later in the process, i.e., not first. Appx12-15. In this regard, the Court's reasoning in *Hytera* is again directly on point. In *Hytera*, when considering whether a "preparing" step must occur before a "determining" step, the Court noted:

> Hytera does not point to any figure or other part of the specification that discloses an embodiment in which the "preparing" step is performed after the "determining" step. Though we have repeatedly held that "it is . . . not enough that the only embodiments, or all of the embodiments, contain a particular limitation to limit a claim term beyond its ordinary meaning," . . . here, *the only embodiments are consistent with the plain meaning of the claim in the order that is written, and we thus decline to construe the claim as allowing deviation from that order*. Therefore, based on the language of the claim, as supported by the embodiments in the specification, we hold that the Board did not err by requiring the claim steps to be performed in the order they are written.

Hytera, 841 F. App'x at 218-19 (emphasis added and internal citation omitted). This is precisely Google's point here—the plain language of the claims requires that the user identification step be performed first, and the specification uniformly supports such a reading.

Moreover, this Court's opinion in *Respironics, Inc. v. Invacare Corp.*, which the Board cited at Appx15 n.9, applied similar reasoning to what Google proposes here. 303 F. App'x 865, 870-71 (Fed. Cir. 2008). In *Respironics*, the Court held that "select[ing] higher and lower pressure magnitudes," as recited in a first step, needed to occur before the remaining steps. *Id.* The claim language itself was not dispositive, but the Court nonetheless limited the claims to require pressure selection first since the specification uniformly described the pressure magnitudes as "preselected," and nowhere did the specification describe an embodiment where the magnitudes were not preselected. *Id.* The Court reasoned that "[t]he preselection of higher and lower pressure magnitudes is not merely a preferred embodiment; it [wa]s the patents' only embodiment." *Id.* at 871. Likewise, the '375 patent uniformly describes identifying the user before performing the remaining steps—neither the Board nor Sonos has pointed to *a single contrary* embodiment.

The rest of the Board's analysis does not undermine this. For example, the Board determined that the specification and purpose of the invention did not require the user to be identified first because the patent's specification "describes ways that the bookmark manager can identify users," like cookies and IP addresses, and in the Board's view, this additional disclosure undermined Google's argument. Appx13-14 (citing Appx70 at 7:38-49); Appx12 (citing Appx70 at 7:47-48; Appx72 at 11:38-40). But the Board ignored that the disclosure of using IP addresses and cookies is

in the *same paragraphs* where the patent makes clear the bookmark manager "*first*" identifies the user before it "*then*" receives the URL that the user identifies. Appx70 at 7:36-51 (emphases added). That cookies and IP addresses may be used generally does not detract from *when* the user must in fact be identified. Indeed, even the part of the specification that the Board cited discussing cookies of "not-logged-in users" explains that identifying "information [was] provided by the user *previously*," i.e., the user was previously identified.

Thus, each part of the specification the Board cites uniformly supports finding that the user must be identified first. The specification is clear and consistent—user identification is performed "*first*" before modification, synchronization, or searching occurs. Appx70 at 7:36-65 (emphasis added). That same order is then recited in the claims. Appx74 at 15:49-16:7. For these reasons, the specification, including all of its embodiments and the purpose of the invention, further supports construing claims 1-11 and 13-16 to require that the step of "identifying a user" must occur prior to the other claimed steps.

C. Substantial Evidence Does Not Support the Board's Finding that Mendez Discloses "Identifying a User" Under the Proper Claim Construction

The Board also erroneously found that Mendez discloses "identifying a user" before the other steps of claim 1, as required under the correct construction. Appx22-24. Its reasoning was three-fold. First, it found Mendez's disclosure of establishing

a communications link in step 730 of Figure 7 discloses relaying user information to the server, and in the Board's view, that demonstrates that the user would have been identified before step 730. Appx23-24. Second, the Board found Mendez discloses appending user information to bookmarks, and in the Board's view, that shows that user identification must occur before bookmark modification and storage. Appx22-23. Third, the Board found it would have been obvious to a skilled artisan to identify a user first, including for example at login, regardless of Mendez's express disclosure. Appx21 n.11. Substantial evidence does not support these findings, and this Court should reverse the Board's unpatentability determination.

1. Mendez Does Not Establish Its "Secure Communications Channel" Before Modification and Synchronization, and Therefore Does Not Identify a User First, as Required by Claims 1-11 and 13-16

The Board credited Sonos's argument that relied on step 730 from Mendez—establishing a secure communication channel—as teaching the "identifying a user" step (step [1-1]). Appx20 (citing Appx237-238). Specifically, Sonos pointed to step 730 and argued "to establish this secure communication channel, the communication modules run routines for applying Secure Socket Layer (SSL) technology and user identification and authentication techniques." Appx237-238 (cleaned up) (quoting Appx1527 at 6:30-35). In its view, at this point in the synchronization process, "the identity of the user" is simply "relayed to the server." Appx238.

But, as shown below, and as Sonos concedes, step 730 does not occur *first* in Mendez's process. Appx452 (Sonos's response referring to steps 705 and 720 when discussing how Mendez "initiates synchronization"). Rather, as Google argued, and as Sonos did not (and cannot) dispute, step 730 occurs *after* Mendez's locally stored workspace elements are modified, Appx398, which Sonos mapped to steps [1-2] and [1-3] of claims 1-11 and 13-16, Appx239-242.[3] Because step 730 in Mendez occurs after workspace modification (steps [1-2] and [1-3]) and after synchronization starts (step [1-4]), it does not (and cannot) teach step [1-1], which must occur first under a proper construction of the claims. Appx398-400; Appx1992-1993 (¶ 48); Appx1527 at 6:1-17; Appx1528-1529 at 8:16-9:41.

[3] Mendez does not describe workspace element modification in the context of Figure 7 but discusses that to initiate its synchronization process, the system must determine whether the selected workspace elements have been modified. *See, e.g.*, Appx1527 at 6:1-17; Appx1529 at 9:8-10, 9:28-41.

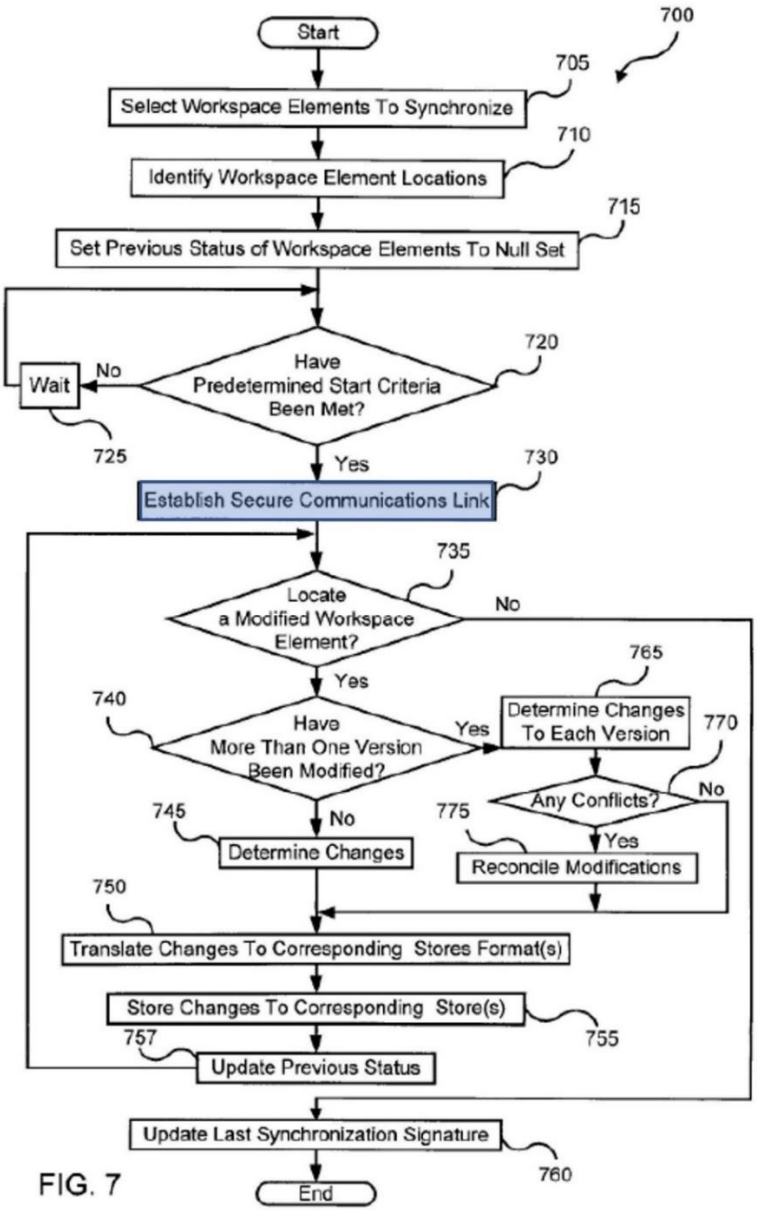


FIG. 7

Appx1524 at Fig. 7 (annotated); *see also supra* Section III.B.

Google's expert supported this point with testimony, explaining that step 730 does not disclose "identifying a user" when properly construed because the feature mapped to element [1-1]—establish a secure communication link, step 730—occurs "after its workspace elements have been modified" and "after the synchronization

has been initiated in step 720." Appx1992-1993 (¶ 48). Sonos never disputed step 730 occurs *after* locally stored workspace elements are modified (i.e., after the steps that Sonos alleges correspond to claim steps [1-2] and [1-3]). And it cannot do so on appeal.

Instead, Sonos's Reply argument—which the Board adopted—was that "[i]n Mendez, identification information must exist on the client device *before* step 730 is performed otherwise it could not be relayed." Appx23-24 (emphasis added) (quoting Appx448). But even if Sonos's attorney argument were accepted at face value (and it should not be), it still falls short because it at best only addresses whether Mendez discloses identifying a user prior to *synchronization*, step [1-4]. It does not address the other part of Dr. Madisetti's testimony explaining that Mendez does not disclose identifying a user prior to *modifying* locally stored workspace elements, which Sonos reads on steps [1-2] and [1-3] (requiring modifying and storing "favorite items stored for the user in a client-side storage of the client device"). Nor did the Board or Sonos provide evidentiary support for this attorney argument or offer anything to rebut the contrary expert testimony of Dr. Madisetti. *See Icon Health & Fitness, Inc. v. Strava, Inc.*, 849 F.3d 1034, 1043 (Fed. Cir. 2017) ("Attorney argument is not evidence."). Substantial evidence does not support finding that Mendez's teachings as to step 730 disclose identifying a user first, as required under the proper construction.

2. Mendez's Disclosures About Appending User Information to *Server*-Side Bookmarks Cannot Support the Board's Findings Because the '375 Claims Require Identifying the User Before Modifying *Client*-Side Bookmarks

The Board also credited Sonos's argument that Mendez discloses "identifying a user" before creation and synchronization based on Mendez's disclosure that user identification information can be appended to each bookmark. Appx22. This too was error because the Board overlooked that the modified bookmarks with identification information are stored on the *server*, whereas the '375 claims expressly require that the user be identified before modification of bookmarks stored on the *client*. This disclosure in Mendez is thus irrelevant to any mapping of Mendez to the claims, just as Google explained in its Sur-Reply. Appx483-484; Appx486. The Board ignored Google's Sur-Reply argument, and it erred in crediting Sonos's argument.

Specifically, the portions of Mendez that the Board and Sonos relied on make it clear that user identification information is only attached to bookmarks when they are stored in the global format on the server. *See, e.g.*, Appx 1525 at 2:43-44, 2:54-55; Appx1526 at 4:11-14, 4:38-41; Appx1528 at 8:47-62. This serves to differentiate users of the server. Appx1527 at 6:30-36. Mendez never suggests adding the same user identification information to local copies of bookmarks stored at the client side. *See* Appx1526 at 4:38-41; Appx1528 at 8:47-62.

In contrast to Mendez, claim 1 of the '375 patent requires "identifying a user" before "modifying the set of favorite items stored for the user *in a client-side storage*

of the client device." Appx74 at 15:49-16:7 (emphasis added). Thus, in claim 1, the relevant bookmarks being modified are on the *client*. Mendez, in contrast, discloses appending user information to bookmarks on the *server*. Thus, to the extent having user information appended to bookmarks is deemed relevant to step [1-1], Mendez's disclosure of appending information on the *server* is not relevant to determining if the user is identified before bookmark modification on the *client*. These portions of Mendez therefore cannot provide substantial evidence support for finding a user is identified before client-side bookmark modification, as claimed.

3. There Is No Evidence in the Record to Support the Board's New Obviousness Position Regarding Mendez

In a footnote, the Board adopted a position raised by neither party, and stated that it "believe[d] a skilled artisan would have recognized that it was well-known and conventional to 'identify[] a user' as a first step in a 'computer-implemented method' such as that of claim 1," and that '[a] log-in step as a first step in a computer-implemented method would have been obvious" to that skilled artisan. Appx21 n.11. There are two problems with the Board's position. First, the Board adopted this for the first time in the Final Written Decision; again, it was never raised below. Second, there is no evidence in the record to support it.

The Board's analysis in its Final Written Decision went beyond the bounds of Sonos's arguments. Regarding obviousness of the "identifying a user" step, Sonos argued "a POSITA would have considered [it] both highly obvious and required" to

have Mendez's "synchronization process include[] user identification" (the process in Figure 7). Appx239 (citing Appx1354 (¶¶ 187-188)). To support this, Sonos said that "it was common at the time . . . for systems that synchronize files between multiple different user devices to engage in user identification." Appx239. But this argument discussed whether it would have been obvious to identify users *generally*; it did not address *when* it would have been obvious to identify users in the process, much less whether it would have been obvious to do so in "[a] log-in step as a first step in" the process. Appx21 n.11. Instead, the Board improperly raised that position for the first time in its Final Written Decision. Doing so denied Google a meaningful opportunity to respond to what the Board deemed "well-known and conventional," contravening the requirements of the Administrative Procedure Act ("APA"). *See In re NuVasive, Inc.*, 841 F.3d 966, 971 (Fed. Cir. 2016). In IPR proceedings, the APA "imposes particular requirements on the PTO. The agency must timely inform the patent owner of the matters of fact and law asserted, [it] must provide all interested parties opportunity for the submission and consideration of facts [and] arguments, . . . and [it] must allow a party . . . to submit rebuttal evidence." *Dell Inc. v. Acceleron, LLC*, 818 F.3d 1293, 1301 (Fed. Cir. 2016) (cleaned up) (citations omitted). Because the Board articulated this for the first time in the Final Written Decision, Google did not have an opportunity to adduce evidence and argument on what might have been

allegedly "well-known and conventional" to a skilled artisan at the time. *See* Appx21 n.11.

The Board's new obviousness theory also fails because it is unsupported by record evidence. *In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1381 (Fed. Cir. 2016) (the Board cannot "raise, address, and decide unpatentability theories never presented by the petitioner and not supported by record evidence"). Indeed, nowhere did the Board cite a single exhibit from the record, a single portion of testimony by any expert from either party, or any other evidence to support what would have been purportedly "well-known and conventional" to a skilled artisan at the time. This is not surprising given that the parties did not discuss this theory below.

For these reasons, substantial evidence does not support finding that Mendez discloses "identifying a user" under the proper claim construction. Accordingly, the Court should reverse the Board's obviousness determination.

VI. CONCLUSION

For the reasons above, Google requests the Court reverse the Board's decision finding claims 1-11 and 13-16 of the '375 patent unpatentable.

Date: May 8, 2023

Respectfully submitted,

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ADDENDUM

ADDENDUM TABLE OF CONTENTS

Ex. or Dkt. No.	Filing Date	Description	Appx No.
24	Nov. 3, 2022	Judgment, Final Written Decision	1
1001	-	US Patent No. 10,140,375	60

Trials@uspto.gov
571-272-7822

Paper 24
Date: November 3, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SONOS, INC.,
Petitioner,

v.

GOOGLE, LLC,
Patent Owner.

IPR2021-00962
Patent 10,140,375 B2

Before KEVIN F. TURNER, TERRENCE W. McMILLIN, and SCOTT RAEVSKY, *Administrative Patent Judges*.

McMILLIN, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a); 37 C.F.R. § 42.73

I. INTRODUCTION

A. Background and Summary

Sonos, Inc. ("Petitioner") filed a Petition requesting an *inter partes* review of claims 1–11 and 13–20 of U.S. Patent No. 10,140,375 B2 (Ex. 1001, "the '375 patent"). Paper 1 ("Pet."). Google, LLC ("Patent Owner") filed a Response. Paper 14 ("Resp."). Petitioner filed a Reply. Paper 16 ("Reply"). Patent Owner filed a Sur-reply. Paper 17 ("Sur-reply"). A Decision Granting Institution of *Inter Partes* Review was entered on November 10, 2021. Paper 11 ("Dec."). Oral argument was heard on August 18, 2022, and a transcript was entered into the record. Paper 23 ("Tr.").

We have jurisdiction to conduct this *inter partes* review under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed herein, we determine that Petitioner has shown, by a preponderance of the evidence, that claims 1–11 and 13–20 of the '375 patent are unpatentable.

B. Related Matters

The parties identify *Google LLC v. Sonos, Inc.*, No. 3:20-cv-03845 (N.D. Cal.) ("the District Court litigation") as a related proceeding in which the '375 patent is asserted. Pet. 3; Paper 8, 2. The parties further identify as related IPR2021-00963 in which the '375 patent was also challenged. *Id.* Institution was denied in IPR2021-00963. IPR2021-00963, Paper 9, 12.

Petitioner also identifies other patents that Patent Owner asserts against Petitioner in the District Court litigation but states that none of the patents are related to the '375 patent. Pet. 3.

C. The '375 Patent

The '375 patent is titled "Personalized Network Searching." Ex. 1001, code (54). The '375 patent explains that "bookmarks that the user continues to use are a valuable resource for the user," but "[a]n Internet user often has difficulty propagating bookmarks between the various machines on which the user depends." *Id.* at 1:50–53. According to the '375 patent, a user may need to manually synchronize the bookmark lists of two machines, and conventional methods for organizing bookmarks tend to be limited. *Id.* at 1:56–60.

The '375 patent discloses that a commercial product has been used to allow a user to store bookmarks on a web server. *Id.* at 1:61–63. However, the '375 patent states that "[w]hile storing the bookmarks on-line addresses the propagation problem, such systems fail t[o] address the organizational problems inherent in conventional bookmarks." *Id.* at 2:2–5. The '375 patent also describes conventional bookmark-related software products to provide a user with functionality for using bookmarks but states that such tools "do not effectively leverage the user's preferences to provide personalized search results." *Id.* at 2:6–8, 2:17–19. In view of this, the '375 patent states that "a need exists to provide an improved system and method for providing personalized network searching." *Id.* at 20–21.

Figure 1 of the '375 patent, reproduced below, shows an exemplary environment in which an embodiment of the '375 patent may operate. *Id.* at 2:47–49.

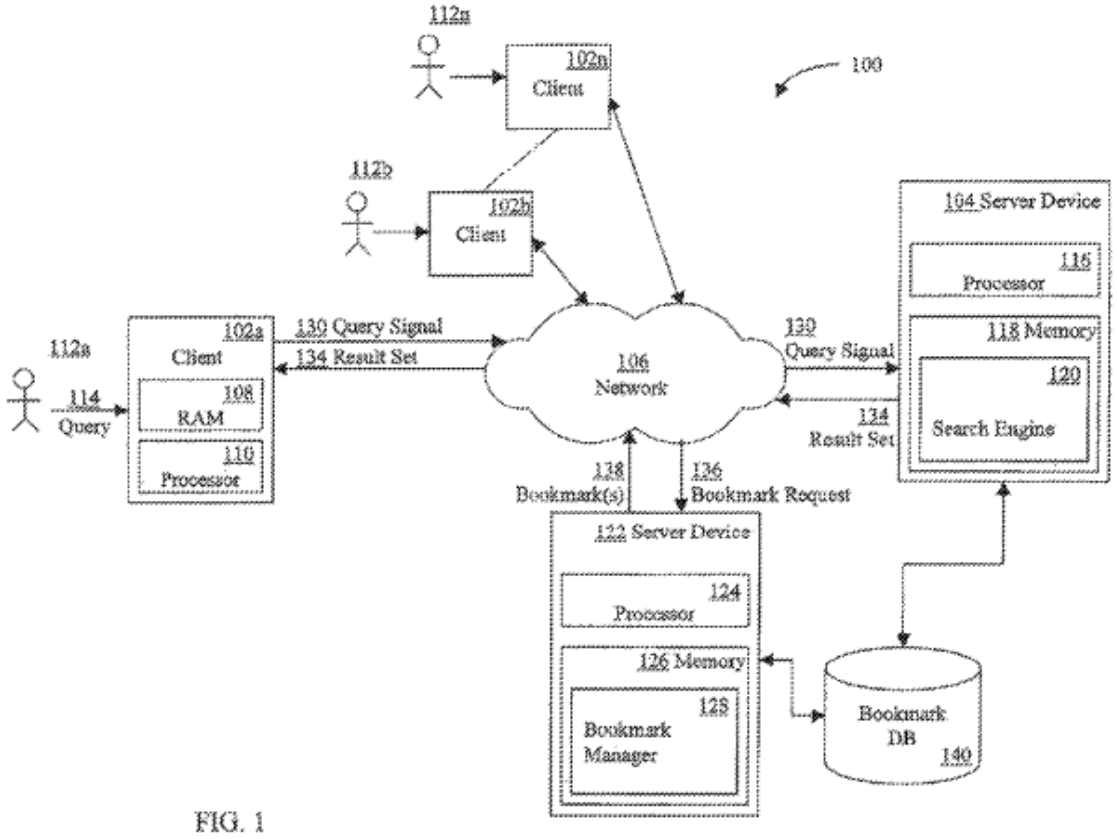

FIG. 1

Figure 1 depicts a system 100 that includes multiple client devices 102a-n that communicate with a server device 104 over network 106. *Id.* at 3:8–10. The '375 patent discloses that "[t]he server device 104 shown includes a server executing a search engine application program, such as the Google™ search engine" and that the search engine 120 is stored in memory 118. *Id.* at 4:14–16, 4:27–28.

The '375 patent states that "the server device 104, or related device, has previously performed a crawl of the network 106 to locate articles, such as web pages, stored at other devices or systems connected to the network 106, and indexed the articles in memory 118 or on another data storage device." *Id.* at 4:31–37. Also, "[m]emory 126 contains the bookmark manager application program, also known as a bookmark manager 128" that "provides a browser-based application that allows the user to create, modify,

delete, and save bookmarks on the network." *Id.* at 4:65–66, 5:6–9. The '375 patent discloses that "bookmarks are saved in the bookmark database 140." *Id.* at 5:11–12. The '375 patent describes making a user's bookmarks available "on all the various computers the user uses" and integrating the bookmarks with a browser. *Id.* at 5:34–38.

The '375 patent describes the search engine 120 performing a search in response to a search query by searching previously indexed articles and creating a bookmark request 136 that corresponds to a user 112a. *Id.* at 5:16–20. According to the '375 patent, "[t]he bookmark manager 128 responds by sending one or more bookmarks 138 to the search engine 120," the search engine 120 then uses the bookmarks 138 "to search sites previously identified by the user 112*a*," and "[t]he search engine then merges the results of the two searches to provide a result set 134 to the client 102*a*." *Id.* at 5:20–25.

D. Challenged Claims

Petitioner challenges claims 1–11 and 13–20 of the '375 patent.[1] Pet. 1. Of the challenged claims, claim 1 is an independent method claim and claim 17 is an independent system claim. Ex. 1001, 15:49–16:7, 17:18–18:21. Claim 1 recites:

> 1. A computer-implemented method performed by at least one processor, the computer-implemented method comprising:
> identifying a user;
> receiving user input from the user through an interface of a client device, the user input indicating a modification to a set of favorite items for the user;
> in response to receiving the user input:

[1] The '375 patent has 20 claims. Ex. 1001, 15:49–18:45. Petitioner challenges all the claims of the '375 patent except claim 12. *See, e.g.*, Pet. 1.

modifying the set of favorite items stored for the user in a client-side storage of the client device, the modification to the set of favorite items initiating a synchronization process to synchronize the set of favorite items modified responsive to the user input with a server-side storage system configured to synchronize favorite items for the user with one or more other client devices, the server-side storage system remote from the client-side storage;

presenting through a single interface of the client device, in response to a query from the user, a combined search results set generated via one or more search subprocesses, the combined search results set including at least two of:

one or more favorite items from the set of favorite items synchronized for the user;

one or more search results from a first global index; or

one or more search results from a second global index.

Id. at 15:49–16:7.

E. The Asserted Grounds

Petitioner challenges claims 1–11 and 13–20 of the '375 patent based on the grounds set forth in the table below.

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1–11, 13–19	103(a)[2]	Mendez[3], Jain[4]
20	103(a)	Mendez, Jain, Nakagawa[5]

[2] The Leahy-Smith America Invents Act ("AIA"), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), revised 35 U.S.C. §§ 102, 103 effective March 16, 2013. Because the challenged patent claims priority to applications filed before March 16, 2013, we refer to the pre-AIA versions of §§ 102, 103. Our opinions on the present record would not change if the AIA versions of §§ 102, 103 were to apply.

[3] US 6,023,708, issued Feb. 8, 2000 (Ex. 1004).

[4] US 6,480,853 B1, issued Nov. 12, 2002 (Ex. 1005).

[5] US 2004/0107236 A1, published June 3, 2004 (Ex. 1006).

Pet. 5. Petitioner relies on testimony in the Declaration of Douglas C. Schmidt, Ph.D. (Ex. 1003). Patent Owner relies on testimony in the Declaration of Vijay K. Madisetti, Ph.D. (Ex. 2003).

II. ANALYSIS

A. Legal Principles

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness.[6] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

"In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable." *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify "with particularity . . . the evidence that supports the grounds for the challenge to each claim")). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

[6] We are not presented with any objective evidence of obviousness to consider.

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

With regard to the level of ordinary skill in the art, Petitioner contends that:

> A POSITA[7] in the technology field of the '375 patent would have had a degree in computer engineering, computer science, or a similar discipline, along with 2 years of professional experience in the fields of networking and network-based systems or applications, such as client-server and web-based systems, or an equivalent level of skill, knowledge, and experience

Pet. 28 (citing Ex. 1003 ¶¶ 37–39). Petitioner further argues that "[t]his POSITA would be aware of and generally knowledgeable about web browser operation, including the use of bookmarks, systems for file synchronization, and the general search procedures employed by search engines available at the time the '375 patent was filed." *Id.* (citing Ex. 1003 ¶ 39). Patent Owner does not address the level of ordinary skill in the art. *See generally* Resp. Petitioner's undisputed proposal is consistent with the technology described in the Specification and the cited prior art. We adopt Petitioner's undisputed level of skill in the art.

C. Claim Construction

Claim construction in this proceeding is governed by 37 C.F.R. § 42.100(b), which provides:

> In an *inter partes* review proceeding, a claim of a patent, or a claim proposed in a motion to amend under §42.121, shall be construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. 282(b), including construing the claim in accordance

[7] POSITA is an acronym commonly used in patent proceedings for "person of ordinary skill in the art."

> with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

Under the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–19 (Fed. Cir. 2005) (en banc), claim terms are given their ordinary and customary meaning, as would have been understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of record. *See Thorner v. Sony Comput. Ent. Am. LLC*, 669 F.3d 1362, 1365–66 (Fed. Cir. 2012). "There are only two exceptions to this general rule: 1) when a patentee sets out a definition and acts as this own lexicographer, or 2) when the patentee disavows the full scope of a claim term either in the specification of during prosecution." *Id.* at 1365. There is a "heavy presumption," however, that a claim term carries its ordinary and customary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (citation omitted).

Petitioner asks us to construe the following claim terms: "favorite items;" "stored . . . in a client-side storage;" "indication of modification;" and "the combined search results set including at least two of." Pet. 14–18. Patent Owner contends that "[t]he construction of these terms does not need to be resolved for the purposes of determining the validity of the claims" and "[a]ccordingly, the Board should not construe these terms." Resp. 5.

We are guided by the principle that we only construe claim terms if, and to the extent that, it is necessary for the purpose of the proceeding. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co. Ltd.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("[W]e need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy.'") (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803

(Fed. Cir. 1999)). We agree with Patent Owner and, as shown below, do not find it necessary to construe any claim terms in order to resolve the controverted matters in this proceeding.[8] Therefore, we give to all the claim terms their ordinary and customary meaning, as would have been understood by a person of ordinary skill in the art at the time of the invention, in light of the language of the claims, the specification, and the prosecution history of record.

Patent Owner raises an additional claim construction issue in the Response. Patent Owner asks us to construe claim 1 to require that the steps of the claimed method must be performed in the recited order. *See* Resp. 6–11. Petitioner disputes this issue to the extent that it argues that claim 1 should not be construed such that the "identifying the user" step (referred to by the parties as step [1-1]) must be performed prior to other steps (referred to the parties as steps [1-2]–[1-5]). Reply 3–5. And, Petitioner argues that it is unnecessary for us to construe claim 1 in this manner as the cited art, Mendez, teaches this limitation even under Patent Owner's proposed construction. *See id.* at 5–8.

As a general rule, "[u]nless the steps of a method [claim] actually recite an order, the steps are not ordinarily construed to require one." *Mformation Techs., Inc. v. Rsch. in Motion Ltd.*, 764 F.3d 1392, 1398 (Fed. Cir. 2014) (citing *Interactive Gift Express, Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1342 (Fed. Cir. 2001)). However, a claim "requires an ordering of steps when the claim language, as a matter of logic or grammar, requires that

[8] Petitioner in its Reply does not dispute Patent Owner's contention that the construction of any claim terms is not necessary or otherwise dispute this contention. *See generally* Reply; *see also* Paper 21 (Petitioner's Hearing Demonstratives), 6 (Petitioner's list of "The Parties' Disputes").

the steps be performed in the order written, or the specification directly or implicitly requires" an order of steps. *Id.* at 1398–99 (quoting *TALtech Ltd. v. Esquel Apparel, Inc.*, 279 Fed. Appx. 974, 978 (Fed. Cir. 2008)). We determine that the claim language does not require that the "identifying the user" step be performed before the other steps based on the claim language or the Specification. Moreover, as discussed below in analyzing the evidence related to this issue, we agree with Petitioner that Mendez teaches "identifying the user" prior to the other steps. *See* II.D.3. below.

Patent Owner contends that "[t]he logic of claim 1 dictates that all steps [1-2] through [1-5] must occur after the user has been identified," because each of steps [1-2]–[1-5] recite "for the user." Resp. 7. Patent Owner argues that "[t]he inclusion of ['for the user'] means that the user must have been previously identified to perform steps involving the modification and searching of the user's favorite items." *Id.* Petitioner provides the following response to this argument:

> Patent Owner reads too much into the claim. Steps [1-2]-[1-5] refer to "the user," not "the identified user." And, while claim 1 does arguably require that steps [1-3]-[1-4] be performed after [1-2]—since these later steps relate to actions performed in response to the "user input" of earlier step [1-2]—it does not follow that the user must be identified per step [1-1] ***before*** input is received or a locally stored set of bookmarks is modified. Input and bookmarks can be "for the user" even if a computer does not yet know it.

Reply 3–4. We agree with Petitioner. We do not see how or why logic dictates "identifying the user" before user input modifying a locally stored set of bookmarks is received. *See* Ex. 1001, 15:53–55 (claim 1, limitation [1-2]).

We also note that logic does not dictate that the last step of claim 1 (limitation [1-5]) be performed before "identifying the user." The last step recited in claim 1 is:

> presenting through a single interface of the client device, in response to a query from the user, a combined search results set generated via one or more search subprocesses, the combined search results set including at least two of:
> one or more favorite items from the set of favorite items synchronized for the user;
> one or more search results from a first global index; or
> one or more search results from a second global index.

Ex. 1001, 15:66–16:7. This limitation could be met by presenting combined search results in response to a query from a user from first and second global indices without identifying the user (i.e., presenting search results from an anonymous search of two global indices). And, the '375 patent states that "a cookie on a client" is one way to identify a user and that "search results may be appropriately personalized based on just the cookie of not-logged-in users." *Id.* at 8:47–48, 11:38–40.

Patent Owner also argues that Figure 2 of the '375 patent supports its proposed construction of "[i]dentifying the user prior to performing the subsequently recited steps of claim 1." Resp. 8. In Figure 2, "Receive Valid User ID" (ref. no. 202) is the first step shown in the depicted "method for storing bookmarks, ratings and annotations in an embodiment of the present invention." Ex. 1001, 2:50–52, 7:19–21. But the fact that in this embodiment (or even every embodiment) "identifying the user" is depicted before the other steps does not support reading that limitation into the claims. *See Aventis Pharma S.A. v. Hospira, Inc.*, 675 F.3d 1324, 1330 (Fed. Cir. 2012) ("'[I]t is . . . not enough that the only embodiment, or all of

the embodiments, contain a particular limitation' to limit a claim term beyond its ordinary meaning." (quoting *Teleflex, Inc. v. Ficosa N. Am. Corp.,* 299 F.3d 1313, 1325 (Fed. Cir. 2002)). Moreover, the Specification of the '375 patent explicitly states that Figure 2 is "exemplary" or "merely exemplary" (Ex. 1001, 5:32, 8:32) and the embodiments are "not intended to be exhaustive or to limit the invention to the precise forms disclosed" (*id.* at 15:41–44). Accordingly, we determine it would be improper to limit the claims to conform to the method depicted in Figure 2.

In addition, Patent Owner argues that "the purpose of the invention disclosed in the '375 patent, personalized network searching, can only be achieved if the user has been identified prior to utilizing the disclosed bookmark manager." Resp. 9 (citing Ex. 1001, 2:25–37; Ex. 2003 ¶ 38). In support of this argument, the Response states:

> The '375 Patent provides personalized search results by searching a user's stored bookmarks or favorite items in addition to searching a global database. '375 Patent, 2:26-33; Madisetti Decl., ¶ 38. The favorite items can be added explicitly by the user or implicitly based on user behavior such as time spent on a site, repeat visits, or the quantity of click-throughs on a site. '375 Patent, 6:60-7:1; Madisetti Decl., ¶ 38. For favorite items to be added implicitly, the user should be identified prior to conducting a web search or accessing a web page to allow the system to track the user's activity. Madisetti Decl., ¶ 38.

Id. We disagree with this argument. The Specification of the '375 patent describes ways that the bookmark manager can identify users. The Specification states:

> Users who desire synchronization across different browsers/computers or other types of personalization need to identify themselves to the bookmark manager 128 to some extent so that the bookmark manager 128 has a primary key

> with which to store a user's bookmarks. The bookmark manager 128 can perform the identification and authentication in numerous ways. For example, in one embodiment, the IP address is tracked throughout a session. In another embodiment, the authentication is done via a user manager system. In another embodiment, a cookie on the client 102a may include user-identifying information, which is supplied to the bookmark manager 128 by the client 102a.

Ex. 1001, 7:38–49. Thus, the Specification states that users only need to identify themselves "to some extent" so that the bookmark manager has a key to store the user's bookmarks and that one way to do that is to identify the user by tracking the IP address throughout a session. Identifying the user by tracking the IP address would allow the bookmark manager to implicitly determine favorite items for the user based on user behavior such as time spent on a site, repeat visits, or the quantity of click-throughs on a site even if the no other identifying information other than the IP address was known.

Finally, Patent Owner argues that "[t]he order of performance of the elements of claim 1 is further confirmed by the antecedent basis for the terms in the later elements coming from the preceding elements." In support of this argument, Patent Owner quotes *E-Pass Techs., Inc. v. 3Com Corp.*, 473 F.3d 1213, 1222 (Fed. Cir. 2007), which says, "because the language of most of the steps of its method claim refer to the completed results of the prior step, E-Pass must show that all of those steps were performed in order." But, while the first step of claim 1 recites "identifying a user" and the later steps refer to "the user" (see Ex. 1001, 15:15:52–16:7), the later steps do not refer to the completed results of "identifying the user" by, for

example, referring to "the identified user" or through the use of any equivalent or similar language.[9]

Although the claims may encompass a method in which "identifying the user" is performed before the other steps, Patent Owner fails to demonstrate that its narrow construction is warranted. Patent Owner identifies no persuasive textual basis in the claims for requiring that the user must be identified before the other steps are performed. Patent Owner identifies no lexicography or disclaimer that justifies imposing a requirement that the "identifying a user" step be performed before the other steps in claim 1. We construe claim 1 by giving the order of its steps an ordinary and customary meaning such that "identifying a user" need not be performed before the other steps.

D. Discussion of Claim 1

We begin our discussion of the challenge to the claims of the '375 patent with a consideration of Petitioner's allegation that claim 1 would have been obvious in view of the combination of Mendez and Jain. *See* Pet. 5, 29–41. We start with a description of the disclosures of Mendez and Jain and then consider the arguments and evidence presented by the Petitioner and Patent Owner relating to the limitations of claim 1.

1. Mendez (Ex. 1004)

Mendez is titled "System and Method for Using a Global Translator to Synchronize Workspace Elements Across a Network." Ex. 1004, code (54).

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[9] In *Respironics, Inc. v. Invacare Corp.*, 303 F. App'x 865, 870 (Fed. Cir. 2008) (citing *Interactive Gift Exp., Inc. v. Compuserve Inc.*, 256 F.3d 1323, 1343 (Fed. Cir. 2001)), the Federal Circuit held that, "in a method claim, a step that recites 'said' or 'the,' referring to an earlier object, does not always have to be performed after the step that first introduces the object."

Specifically, Mendez "relates generally to computer networks, and more particularly to a system and method for using a global translator to synchronize workspace elements such as files across a computer network." *Id.* at 1:19–22. Mendez describes data consistency problems that arise when using application programs from different vendors, such as web browsers from different vendors that store bookmarks. *Id.* at 1:41–45. Mendez explains that "since each web browser uses different formats and stores bookmarks in different files, the bookmarks are not interchangeable" and "one web browser may store a needed bookmark, and the other may not," such as when one web browser is used at home and a different web browser is used at work. *Id.* at 1:45–52.

Mendez describes "a system and method for using a global translator to synchronize multiple copies of a workspace element in a secure network environment." *Id.* at 1:59–61. Mendez states that its system and method permit clients to "automatically synchronize workspace elements across different formats and can merge workspace element folders for cross use" and between multiple sites. *Id.* at 1:63–2:2.

Figure 1, reproduced below, shows a diagram of a computer network.

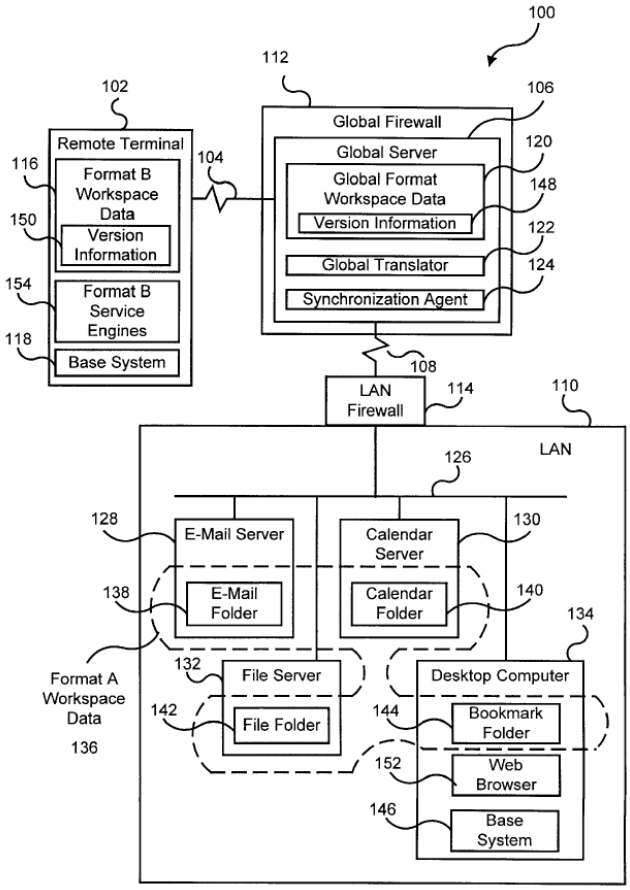

FIG. 1

Figure 1 depicts a computer network 100 that includes "a remote computer terminal 102 coupled via a communications channel 104 such as the Internet to a global server 106." *Id.* at 2:62–65. Mendez discloses that "[t]he global server 106 is in turn coupled via a communications channel 108 such as the Internet to a second node such as a Local Area Network (LAN) 110." *Id.* at 2:65–3:1. LAN 110 is coupled to "a desktop computer 134 having a web browser 152 and a bookmark folder 144 containing bookmarks." *Id.* at 3:4–10.

Mendez explains that "[t]he remote terminal 102 stores service engines 154 for maintaining workspace data 116, which may include information common with information in the workspace data 136." *Id.* at

3:42–45. Mendez further describes the global server 106 as acting "as a third party administrator" that "stores independently-modifiable copies of selected portions of the workspace data 136 and 116," which is collectively referred to as workspace data 120. *Id.* at 3:66–4:2. The network 100 also includes "synchronization means, which includes a base system 146 stored within the LAN 110 and for example on the desktop computer 134" and a synchronization agent 124, such as on the global server 106, that "cooperate to synchronize selected portions of the workspace data 136 with selected portions of the workspace data 120," such as a bookmark folder. *Id.* at 4:23–34.

2. Jain (Ex. 1005)

Jain is titled "Systems, Methods and Computer Program Products for Performing Internet Searches Utilizing Bookmarks." Ex. 1005, code (54). Jain "relates generally to information searching and, more particularly, to information searching on the Internet." *Id.* at 1:8–10. Jain explains that conventional web browsers have a bookmark function, but "[f]or a typical user, a list of bookmarks can become quite large" and "a user may forget what is contained within a particular bookmarked Web page, or may forget the significance of the bookmark." *Id.* at 2:19–21, 2:25–29.

The object of Jain's invention is "to enhance searching for information on the Internet." *Id.* at 2:52–54. Specifically, Jain describes "allowing a Web server search engine to search a user's bookmarks stored within the user's browser on a client device." *Id.* at 2:55–59. For instance, "[a] user's search request to a search engine is accompanied by a list of bookmarks stored within the user's browser." *Id.* at 2:59–61. Jain explains that "[a] search engine receiving a search request and accompanying list of bookmarks initially searches the list of bookmarks for URLs that satisfy the

search request" and "[e]ach of the user's bookmarks that satisfies the search request is then displayed within the user's browser." *Id.* at 3:8–12. Jain discloses that "[t]he search engine can then search the Internet for Web pages (or other files) that also satisfy the search request," and "[t]he results from this search may also be displayed within the user's browser." *Id.* at 3:12–15.

3. Element-by-Element Analysis of Claim 1[10]

A computer-implemented method performed by at least one processor, the computer-implemented method comprising:

Petitioner does not take a position as to whether the preamble of claim 1 is limiting. Pet. 29 ("To the extent the preamble is limiting, Mendez teaches a 'system and method … to synchronize workspace elements such as files across a computer network.'") (citing Ex. 1003 ¶¶ 174–177; Ex. 1004, 1:19–22). Petitioner contends that both Mendez and Jain teach multiple computers and processors. *Id.* (citing Ex. 1004, 5:6–12, 5:63–67, 11:18–21, Figs. 1–3; Ex. 1005, 1:16–20, 4:33–36). These contentions are supported by the cited art.

Patent Owner does not take a position as to whether the preamble of claim 1 is limiting or dispute Petitioner's showing that the cited art teaches the elements of the preamble of claim 1. *See generally* Resp.

Because Petitioner has shown sufficiently that the recitations in the preamble are satisfied by the cited art, we need not determine whether the preamble is limiting. *See Vivid Techs.*, 200 F.3d at 803. However, we also find that, even if the preamble is limiting, Petitioner has shown that the cited art teaches or suggests all the elements of the preamble of claim 1.

[10] We adopt the Petitioner's parsing of claim 1 in order to follow the presentation in the Petition. *See* Pet. 29–41.

identifying a user;

Petitioner relies on Mendez for this limitation. Pet. 29–31 (citing Ex. 1003 ¶¶ 178–191). Petitioner contends, "Mendez teaches an authentication process that includes the step of 'identifying a user.'" *Id.* at 29. In support of this contention, Petitioner argues:

> Mendez's system allows "a client user who maintains a work site, a home site, an off-site and the global server site" to "synchronize workspace data or portions thereof among all four sites." (Ex. 1004, 2:20-23.) As part of this synchronization process, a "secure communications channel" is "establish[ed]" between a "communications module 405" (part of the desktop computer and remote terminal) and a "communications module 505" (part of the global server). (*See id.*, 9:23-25; Fig. 7; *see also* 4:23-28, 6:18-26, 8:16-22.) "[T]o establish" this "secure communication channel," the communication modules run "routines for applying Secure Socket Layer (SSL) technology and user identification and authentication techniques (*i.e.*, digital certificates) …." (*Id.*, 6:30-35.) In other words, the identity of the user of a particular device (like the desktop computer) is confirmed and relayed to the server before synchronization can occur. (*See id.*)

Id. at 29–30 (alteration in original). Mendez supports this contention.

Petitioner also contends that Mendez teaches "stor[ing] bookmark data at the remote global server in association with the user's identification to allow the user's other devices to obtain copies of the synchronized bookmarks upon communication with the server." *Id.* at 30. In support, Petitioner argues Mendez "teaches that the data synchronized by its system can include 'workspace data' such as 'bookmarks.' (*See* [Ex. 1004], 3:30-36.) These synchronized bookmarks can be accompanied by, among other information, a 'user identification (ID).' (*Id.*, 8:57-62; Fig. 6.)." *Id.* Mendez supports this contention.

In the Petition, it is also argued that, "[e]ven if Mendez did not itself teach that its synchronization process includes user identification, a POSITA would have considered this both highly obvious and required. Otherwise, Mendez's system would be unable to determine which user devices to synchronize." Pet. 31 (citing Ex. 1003 ¶¶ 187–188). Petitioner further contends that, "it was common at the time the '375 patent was filed for systems that synchronize files between multiple different user devices to engage in user identification." *Id.* (citing Ex. 1003 ¶¶ 189–191; Ex. 1006 ¶¶ 23–25, 172, 362). And, in the Reply, Petitioner contends that "Patent Owner does not dispute that it would have been obvious to 'associat[e] devices with a user.'" Reply 2 (citing Resp. 17) (alteration in original). It does appear from Patent Owner's Response that Patent Owner acknowledges that "a person of skill would have considered user identification 'both highly obvious and required . . . to determine which user devices to synchronize'" as argued in the Petition. *See* Resp. 17 (citing Ex. 2003 ¶ 49).[11]

Patent Owner does not dispute that Mendez teaches "identifying the user," but contends that this limitation is not met because the steps of method of claim 1 must be performed in the order recited and Mendez does not teach doing so. *See* Resp. 14–17. Patent Owner argues, "[t]he Petition

[11] Although we agree with Petitioner that Mendez teaches "identifying a user" as recited in claim 1, we also believe a skilled artisan would have recognized that it was well-known and conventional to "identify[ ] a user" as a first step in a "computer-implemented method" such as that of claim 1 by, for example, requiring the user to input log-in credentials, especially prior to "receiving user input" to personalized data such as "modification to a set of favorite items for the user." A log-in step as a first step in a computer-implemented method would have been obvious to a skilled artisan as of the priority date of the '375 patent.

fails to map this element in the context required by the claims, where the user is identified prior to modifying the favorite items" and "claim 1 requires identifying a user prior to modifying the favorite items." *Id.* at 14 (citing Ex. 2003 (Madisetti Decl.) ¶¶ 45–46). Specifically, Patent Owner argues that Petitioner maps the "identifying the user" limitation to "Establish Secure Communications Link" (ref. no. 730 in Fig. 7) that "occurs after its workspace elements have been modified" and "also occurs after the synchronization has been initiated in step 720 of Mendez's Figure 7." *Id.* at 15. This argument is based on Patent Owner's claim construction contention regarding the order of the steps which we have considered and rejected. *See* § II.C. above. Accordingly, we also reject this argument.

In the Reply, Petitioner contends that, even if Patent Owner's claim construction argument regarding order of the steps is correct, Mendez teaches "identifying the user" prior to performing the other steps of claim 1 and that this was shown in the Petition. Reply 5–8.

> The Petition (Paper 1) begins by noting Mendez allows a "***client user***" to synchronize bookmarks between "a work site, a home site, [and] an off-site." (*See* Petition at 29-30 (citing Ex. 1004, 2:20-23) (emphasis added).) As part of this, Mendez explains that a "user" can "log-on" (*id.*, 2:29) and "user identification (ID)" information can be appended to each created bookmark (*see id.*, 8:57-62, Fig. 6). Because user identification information is appended to each bookmark, this information must have been collected and exists before bookmark creation. The Petition also explained that user identification is a fundamental—and highly obvious—part of any synchronization process. (Petition at 31.) Patent Owner does not meaningfully respond to any of this.

Id. at 6. We agree with Petitioner that the cited passages in Mendez teach "identifying a user" prior to the creation of the bookmark and

synchronization of the sets of bookmarks and that this material was presented in the Petition.

Petitioner also argues that Patent Owner misunderstands why it cited Figure 7 and the related description in the Petition. Reply 6–8. Petitioner states that, "[t]he Petition does not cite step 730 in Figure 7 because it is the earliest moment in time when user identification occurs. Instead, the step is cited because its presence in Mendez shows that the user has ***already*** been identified." *Id.* at 6–7. The Reply explains:

> Step 730 entails opening "secure communication channel" between a client device and a central server. (*See* Ex. 1004, 9:23-25.) As part of this, Mendez's "communication module 405" runs "routines for applying Secure Socket Layer (SSL) technology and user identification and authentication techniques (*i.e.*, digital certificates)" that are used "to establish" the "secure communication channel." (*Id.*, 6:30-35). In other words, step 730 relates to the ***relay*** of user identification information from a client device to a server to allow the server to engage in authentication. (*See id.*) But claim 1 does not require relaying identification information to a server. It only requires "identifying a user." The time at which this identification is sent to a server is not pertinent. In Mendez, identification information must exist on the client device before step 730 is performed otherwise it could not be relayed. Indeed, Mendez itself already explains how a user is identified: a user can "log-on," or saved "user[] preferences" can be accessed allowing Mendez's synchronization system to operate "unattended by the client user." (*See* Ex. 1004, 2:29, 38-40.) This is no different from how the '375 patent itself engages in identification: it employs well-known methods for user identification such as via "IP address" or "a cookie on the client." (Ex. 1001, 7:44-49.) Thus, in the '375 patent, as in Mendez, "identification" can occur from the mere use of or log-on to a particular device. The user does not necessarily need to take any affirmative step.

Id. at 7–8. Here again, we agree with Petitioner. Petitioner's argument that Mendez must have previously identified the user to transmit the user identification is persuasive.

Considering all the arguments and weighing all the evidence relating to this limitation, we determine that Petitioner has shown that the cited art teaches this limitation. We find that Mendez teaches "identifying a user" as recited in claim 1 of the '375 patent based on evidence submitted by Petitioner particularly Ex. 1004, 2:20–23, 2:29, 6:30–35, 8:57–62, Figs. 6, 7.

receiving user input from the user through an interface of a client device, the user input indicating a modification to a set of favorite items for the user;

Petitioner relies on Mendez as teaching this limitation. Pet. 31–33 (citing Ex. 1003 ¶¶ 192–200). Petitioner contends that "Mendez teaches using well-known, commercially available browsers with user[] interfaces that permitted users to create, edit, remove and otherwise modify a set of favorites/bookmarks that are then synchronized between multiple 'client devices.'" *Id.* at 31. With regard to teaching "receiving user input from the user through an interface of a client device," the Petition states:

> Mendez's system synchronizes devices like a "desktop computer 134" and a "remote terminal 102" such as a "smart telephone," "PDA," or "laptop computer." (Ex. 1004, 3:4-10; 3:57-65.) These devices run applications—like "web browser 152"—that include an interface. (*See id.*, 3:33-36, 3:42-51; *see also* 6:18-25, 6:38-42 (client devices include a "user interface module 410" to present a user with "a conventional Graphical User Interface (GUI).").) Further, each of these client devices includes an "input device . . . such as a keyboard and mouse" to facilitate user interaction with the interface. (*Id.*, 5:6-14.)

Id. at 31–32. Petitioner also contends, "Mendez's client devices also each include the claimed "set of favorite items" (i.e., bookmark URLs)." *Id.* at 32

(citing Ex. 1004, 1:42–45, 3:4–10, 3:25–31, 8:57–62). And, Petitioner further contends, Mendez teaches "the stored bookmarks are subject to 'modification' by users" by "[f]or instance, a set of bookmarks that includes 'elements 1, 2, and 3' can be modified such that it includes 'elements 2, 3, and 4 by 'deleting element 1 and adding element 4.'" *Id.* at 32–33 (citing Ex. 1004, 5:29–54, 7:21–8:3). Mendez supports these contentions.

Patent Owner argues that Mendez does not disclose this limitation because "Mendez's favorites are generic to the device and not the user." Resp. 18. Patent Owner's argument is rooted in a contention that claim 1 requires specifically identifying "the user" of a possibly-shared device in order to meet the claim element "favorite items for the user." *Id.* ("the claimed process is rooted in the user's identity").[12] Patent Owner contends Mendez does not teach "favorite items for the user," because:

> Mendez's workspace elements are stored in folders or files associated with the device instead of folders or files associated with the user. Mendez, 3:4-29; Madisetti Decl., ¶ 54. The bookmarks of Mendez are stored in the bookmarks folder or file associated with device. Mendez, 4:31-34, 4:47-53; Madisetti Decl., ¶ 54. Mendez does not disclose any way to differentiate workspace elements stored for one user versus another user of the device, aside from manual selection of the workspace elements for synchronization. *See* Mendez, 4:28-30, Fig. 7; Madisetti Decl., ¶ 54.
>
> The workspace elements in Mendez are not stored for the user because the user in Mendez has not been identified prior to creating or modifying its workspace elements. Madisetti Decl., ¶ 55. Mendez and the Petition assume the devices are used by only one user, but at the time Mendez was filed, May 29, 1997, it would have been typical for a home desktop computer to be

[12] Patent Owner fails to reconcile this argument with the disclosure of an embodiment of the invention in the '375 patent with "community" and "shared" bookmarks. Ex. 1001, 6:50–59.

> shared by multiple members of a household. *Id.*; *see* Mendez, 2:20-23.

Id. at 19. We reject this argument because one of the ways the '375 patent describes for identifying the user is by using the IP address. *See* Ex. 1001, 44–45. Identifying the user by tracking the IP address would not distinguish one user of the device from another user of the device so that, using Patent Owner's words, the identification of the user would be generic to the device.

Moreover, Patent Owner fails to identify any specific language in this limitation that supports the distinction it argues. At bottom, Patent Owner's argument is based on a contention that Mendez fails to previously perform the first step of the claimed method, "identifying a user." *Id.* at 19 ("The workspace elements in Mendez are not stored for the user because the user in Mendez has not been identified prior to creating or modifying its workspace elements."). As discussed above with regard to this first limitation, we find that Mendez does teach "identifying a user."

In the Reply, Petitioner argues:

> Mendez expressly states that its system allows a "***client user***" to synchronize workspace elements between various of the ***user's*** different devices. (Ex. 1004, 2:18-23 (emphasis added).) Mendez also explains how this is done: ***"user identification (ID)"*** information is appended to each created bookmark. (*Id.*, 8:57- 62, Fig. 6). It is not limited to the mere association of bookmarks with devices. Instead, Mendez specifically stores bookmarks on a user-by-user basis. While it is of course true that "a home desktop computer" can be "shared by multiple members of a household" as Patent Owner notes (Response at 19), this does not somehow negate Mendez's teachings that a "user" can "log on," that a "client user['s]" bookmarks are synchronized, and each bookmark includes appended "user identification" (and not merely device) information. Moreover, while Mendez does append user information to bookmarks, nothing about the '375 patent's

> claims requires the separate storage of bookmarks on a user-by-user basis. To the extent Patent Owner is arguing that this is required, it is improperly reading limitations into the claims.

Reply 9. We agree with Petitioner and also reject Patent Owner's argument as contrary to the specific teachings of Mendez that Petitioner identifies in the Reply and for the reasons set forth in the Reply.

We find that a preponderance of the evidence shows Mendez teaches this limitation.

in response to receiving the user input: modifying the set of favorite items stored for the user in a client-side storage of the client device,

Petitioner relies on Mendez for teaching these elements of claim 1. Pet. 33–34 (citing Ex. 1003 ¶¶ 201–205). The Petition states, "[a]s explained in connection with [the previous] limitation . . . each of the client devices in Mendez's system includes at least one user interface that accepts user input provided by a mouse, keyboard, *etc*. This input can modify (for instance, adding or removing) bookmarked favorites residing on that device." *Id.* at 33. And, "Mendez also teaches that its 'set of favorite items' (the folder of bookmarks) is 'stored . . . in a client-side storage.' In particular, 'bookmarks folder 144' may be 'stored in [a] data storage device 330' of a desktop computer." *Id.* (citing Ex. 1004, 1:41–45). Mendez supports this showing.

Patent Owner contends that Mendez does not teach "favorite items stored ***for the user***" for the reasons discussed above in connection with the previously-recited limitations. Resp. 18–19.[13] We reject this contention for

[13] Patent Owner also contends that Mendez does not teach "favorite items . . . for the user" as recited in the next limitation of claim 1 and "bookmarks . . . for the user" as recited in claim 17 for the same reasons. Resp. 18–19. We reject these contentions for the reasons previously stated and do not

the reasons set forth above. Patent Owner does not otherwise dispute that Mendez teaches this limitation.

We find that a preponderance of the evidence establishes that Mendez teaches this limitation.

the modification to the set of favorite items initiating a synchronization process to synchronize the set of favorite items modified responsive to the user input with a server-side storage system configured to synchronize favorite items for the user with one or more other client devices, the server-side storage system remote from the client-side storage;

Petitioner relies on Mendez for teaching these elements of claim 1. Pet. 34–38 (citing Ex. 1003 ¶¶ 206–226). Petitioner contends that "Mendez allows local client devices to 'automatically synchronize workspace elements,' including bookmarks, 'between multiple sites' connected to a remotely located server" and "[t]his synchronization can be automatically initiated when changes are made to the set of favorite items." *Id.* at 34 (citing Ex. 1004, 1:63-65). The Petition states:

> According to Mendez, the desktop computer, remote terminal, and global server "cooperate to synchronize selected portions of the workspace data 136" and "data 116" (the local, client stored bookmarks) "with selected portions of the workspace data 120" (the remote, server stored bookmarks). ([Ex. 1004,] 4:28-34.) Further, because this "synchronization means independently synchronizes the selected portions of workspace data 116 and 136 with the selected portions of the workspace data 120," "the synchronization means indirectly synchronizes workspace data 136 with workspace data 116." (*Id.*, 5:1-5.) Thus, Mendez's "server-side storage system" (its global server 106) is "configured" to synchronize with both a first "client device" with "client-side storage" (the desktop 134 with data 136) and "one or more other client devices" (the remote terminal 102 with data 116).

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discuss these contentions in our further analysis of claim 1 or our analysis of claim 17.

Id. at 36–37. Figure 7 of Mendez is reproduced below.

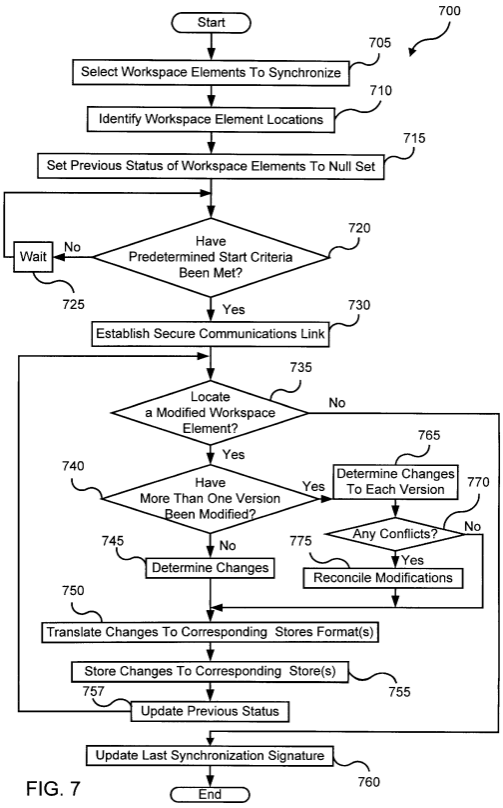

FIG. 7

Figure 7 depicts "a method for synchronizing multiple copies of a workspace element in a secure network." Ex. 1004, 2:56–58. With regard to the synchronization method of Figure 7, the Petition provides:

> Initiation of the synchronization process after modification of workspace data (like the bookmarks) by a user is also shown in Figure 7. More particularly, in steps 735 and 745, the remote terminal's, desktop computer's, and global server's "synchronization modules" all "determine whether any workspace elements have been modified" and what "changes [were] made." ([Ex. 1004], 9:26-33, 49-51.) If the "workspace data 136 or 116" (the locally stored bookmarks) has been modified, then the "workspace data 120" (the server stored bookmarks) is updated in step 755. (*Id.* at 9:62-10:1.) This then allows the server to synchronize the bookmarks with the user's other devices: once the "workspace data 120" is modified, "the outdated workspace element in the workspace

> data 136 or 116" is "update[ed]." (*Id.*, 9:55-62; *see also* Ex. 1003, ¶¶ 222-226.)

Pet. 38. Mendez supports Petitioner's showing as to these elements of claim 1.

Patent Owner challenges whether the Petition shows that Mendez teaches "the ***modification*** to the set of favorite items ***initiating a synchronization process*** to synchronize the set of favorite items modified responsive to the user input" as recited in claim 1. Resp. 20–24. Patent Owner acknowledges that "Mendez does disclose synchronization of workspace data across devices using a server," but argues "that synchronization is not initiated by modifications to the data." *Id.* at 20. And, Patent Owner further acknowledges that "[t]he Petition maps [this limitation] to a passage in Mendez that states that the synchronization of workspace elements may initiate data synchronization 'after a predetermined number of changes.'" *Id.* (citing Pet. 37 (quoting Ex. 1004, 7:6–13)). Patent Owner criticizes the showing in the Petition but never sufficiently explains why this passage indicating that Mendez initiates synchronization after a predetermined number of changes does not teach the disputed elements. *See id.* at 20–24. We find that this passage in Mendez (Ex. 1004, 7:6–13) does teach "the modification to the set of favorite items initiating a synchronization process to synchronize the set of favorite items modified responsive to the user input" as recited in claim 1.

Patent Owner's other criticisms of the showing in the Petition as to this limitation are unavailing in showing Mendez does not teach this limitation. As shown above, in the Petition, steps 735 ("Locate a Modified Workspace Element?") and 740 ("Have More Than One Versions Been Modified?") depicted in the flowchart in Figure 7 were cited to show that in

Mendez steps 735 and 740 teach determining whether modifications were made and, if so, synchronizing the elements in step 755 ("Store Changes to Corresponding Store(s)"). Pet. 38 (citing Ex. 1004, 9:26–33, 9:49–51, 9:62–10:1, Fig. 7.). Patent Owner criticizes this showing on the basis that step 720 ("Have Predetermined Start Criteria Been Met?") of Figure 7 more directly relates to initiation of the synchronization process. Resp. 21–24. Specifically, Patent Owner argues that, because Figure 7 shows that, in Mendez's disclosed method, there is potential waiting step 725 ("Wait"), "the synchronization is initiated based on the result of a periodic check rather than being 'automatically initiated when changes are made to the set of favorite items,' as the Petition claims." *Id.* at 23. But, in making this argument, Patent Owner again acknowledges that Mendez teaches initiating synchronization after a predetermined number of changes where that number of changes could be one change. *Id.* Thus, rather than showing that Mendez does not teach initiating synchronization based on a modification, the evidence referred to by Patent Owner shows that, taken as a whole, Figure 7 and its related description[14] teach these specific elements of this limitation.

In reply, the Petitioner argues that Patent Owner's criticism "makes no sense." Reply 11. Specifically, Petitioner argues:

The fact that Mendez waits for the occurrence of a

[14] In the detailed description of steps 720 and 725, Mendez states, "[t]he synchronization-start module 420 in step 720 determines whether the predetermined criteria have been met which indicate that synchronization of the workspace elements selected in step 705 should start. If not, then the synchronization-start module 420 in step waits and loops back to step 720." Ex. 1004, 9:18–23. Thus, Mendez teaches that, if the predetermined criteria are met (including a predetermined number of changes (Ex. 1004, 7:8–13)), synchronization is initiated.

> synchronization triggering event—which Patent Owner admits can include user modification of a bookmark—does not distinguish it from claim 1. Waiting for a triggering event is exactly what claim 1 requires. Rather than synchronizing only at a scheduled time or interval, Mendez waits for triggering events to occur, periodically checks for the event, and then initiates synchronization when the event occurs. (*See* Ex. 1004, Fig. 7; 9:18-20 ("The synchronization-start module 420 in step 720 determines whether predetermined criteria have been met which indicate that synchronization of the workspace elements selected in step 705 should start.").)
>
> Moreover, even if Patent Owner were correct—that Mendez "initiates a check after the 'wait' period to determine if the predetermined start criteria was met" (Response at 23)—nothing in the claims requires that the synchronization happen ***immediately*** and instantaneously following a modification. Rather, the claim simply requires that modification "initiat[es] a synchronization process." Patent Owner does not dispute that the start criteria in Mendez can include a single change. (*Id.*) Thus, regardless of whether the synchronization begins after a "wait" period, or immediately upon a modification, the synchronization is still initiated by the modification.

Id. We agree with Petitioner. Mendez clearly teaches initiating synchronization upon receiving user input that makes a modification to the workspace elements.

We find that a preponderance of the evidence shows that Mendez teaches this limitation of claim 1.

presenting through a single interface of the client device, in response to a query from the user, a combined search results set generated via one or more search subprocesses, the combined search results set including at least two of:

one or more favorite items from the set of favorite items synchronized for the user;

one or more search results from a first global index; or

one or more search results from a second global index.

Petitioner relies on the combination of Mendez and Jain for teaching these elements of claim 1. Pet. 38–41 (citing Ex. 1003 ¶¶ 227–245). With regard to Mendez, the Petition states:

> Mendez explains that its "desktop computer 134" and "remote terminal 102" both include a "web browser" and store "bookmarks." (Ex. 1004, 3:4-10, 42-51; *see also* 1:41-45.) Mendez does not, however, specifically discuss the use of these browsers to facilitate user search "quer[ies]," or the presentation of the "combined search results" required by this limitation. Regardless, this would have been obvious in view of Jain.

Id. at 38–39. Thus, Petitioner primarily relies on Jain for teaching the use of browsers to facilitate user search queries and the presentation of combined search results. With regard to Jain, the Petition states:

> [A]s claim 1 requires, Jain's system allows a user to enter a search query in a web browser interface. This query—along with the user's bookmarks— are transmitted to a search engine. The search engine then returns a combined search result set for display to the user. This combined result set includes both (1) the user's bookmarks that match the query and (2) matches found in the general Web index accessible to the search engine.

Id. at 41. In support of the contention that Jain teaches these elements of claim 1, Petitioner provides a detailed description of the process taught by Jain. *See id.* at 39–41 (citing Ex. 1005, 2:19–21, 2:30–31, 2:52–61, 3:8–15, 5:38–55, 5:58–6:3, 6:5–7, 7:27–37, Figs. 1, 3–5).

Patent Owner argues that Jain does not teach the presentation of combined search results but instead teaches presentation of search results from the locally-saved bookmarks before presentation of the search results from a global search. *See* Resp. 24–28. But, in making this argument, Patent Owner ignores the most pertinent teachings in Jain including those

that specifically teach the presentation of combined search results. *See* Reply 12 ("Patent Owner focuses on some of Jain's teachings while ignoring everything else.").

The Petition cites the following sentence in Jain that specifically teaches presenting combined search results: "The URLs of Web pages (or other files) that satisfy the search request are then displayed to the user, along with the user's bookmarks that satisfy the search request, via the user's browser (Block 216)." Pet. 40 (citing Ex. 1005, 27–37). In disputing that Jain teaches displaying combined search results, Patent Owner discusses Figure 5 (in which Block 216 is depicted), but focuses only on the presentation of results of the search of the bookmarks depicted in Block 212 ("Display Within Browser Bookmarked URLs That Satisfy Search Request"). Resp. 26–28. However, the next step after Block 212 in the flowchart of Figure 5 is Block 214 ("Search Internet For Files That Satisfy Search Request") and the next step after that is Block 216 ("Display Within Browser Each URL That Satisfies Search Request"). Of course, Block 212 and its related description (Ex. 1005, 7:27–30) do not teach displaying results from the search of the Internet. The search of the Internet is taught in following Block 214. Thereafter, Block 216 and its related description (Ex. 1005, 7:32–37) depict displaying "Each URL" that satisfies the search request (there is only one search request depicted in Figure 5 and described in relation to Figure 5 (*id.* at 7:16–20)) and specifically describes displaying the combined search results. *Id.* at 7:32–36, Fig. 5.

And, contrary to Patent Owner's contention that Jain does not teach displaying combined search results, Figure 3 of Jain and its related description do so. Figure 3 depicts at Block 104 ("Search Received List of Bookmarks For Files That Satisfy Search Request") searching bookmarks; at

Block 106 ("Search Internet For Files that Satisfy Search Request") searching the Internet; and at Block 108 ("Display Within Browser Each URL That Satisfies Search Request") displaying the combined results. *See* Ex. 1005, Fig. 3. The detailed description of Figure 3 provides the same teachings. *Id.* at 5:34–6:3. There is only one search request depicted in Figure 3, two searches (of the bookmarks and of the Internet), and only one display of "[t]he URLs of Web pages (or other files) that satisfy the search request." *Id.* We also note that claim 9 of Jain that is directed to "[a] method of searching the Internet" recites "searching the received list of URLs stored in the client device bookmark mechanism;" "searching the Internet for Web pages;" and "displaying within the browser application URLs from the list of URLs stored in the client device bookmark mechanism and from Web page that satisfy the search request." Ex. 1005, 8:44–67.

We find that the evidence shows that all the elements of the last limitation of claim 1 are taught by the cited art.

Summary

In summary, the cited art supports Petitioner's showing that Mendez and Jain teach all the limitations of claim 1. Patent Owner's arguments to the contrary are not persuasive. The clear preponderance of the evidence supports our findings that the Mendez-Jain combination teaches all the elements of claim 1 of the '375 patent.

E. Element-by-Element Analysis of Claim 17[15]

Independent Claim 17 is also challenged based on a combination of the teachings of Mendez and Jain. *See* Pet. 5, 50–56. Claim 17 is a system claim that contains some limitations similar to those of method claim 1 but also others which differ significantly from claim 1. *Compare* Ex. 1001, 17:18–18:21 (claim 17), *with id.* at 15:49–16:7 (claim 1).

A system to synchronize bookmarks among devices, comprising:

Petitioner does not take a position as to whether the preamble of claim 17 is limiting. Pet. 50 ("To the extent limiting, this is taught by Mendez for the same reasons explained for claim 1: Mendez relates to a system and method for synchronizing bookmarks between different devices associated with a particular user.") (citing Ex. 1003 ¶¶ 321–324).

Patent Owner does not take a position as to whether the preamble of claim 17 is limiting or dispute Petitioner's showing that the cited art teaches the elements of the preamble of claim 17. *See generally* Resp.

Because Petitioner has shown sufficiently that the recitations in the preamble are satisfied by Mendez, we need not determine whether the preamble is limiting. *See Vivid Techs.*, 200 F.3d at 803. However, we also determine that, even if the preamble is limiting, Petitioner has shown that the cited art teaches or suggests all the elements of the preamble of claim 17.

a first client device comprising one or more processors and memory, the first client device comprising a first application program stored in the memory of the first client device and executed by the first client device; and

Petitioner relies on Mendez for teaching all the elements of this limitation. Pet. 51. The Petition states:

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[15] We adopt the Petitioner's parsing of claim 17 in order to follow the presentation in the Petition. *See* Pet. 50–56.

> Mendez's system allows for the synchronization of bookmarks and other files locally stored on multiple client devices. (*See* Ex. 1004, 1:63-65, 2:20-23.) One such device—corresponding to the claimed first client device—is "desktop computer 134." (*Id.*, 3:4-10; Fig. 1.) This computer has a "CPU 305," "a data storage device 330 and RAM 335." (*Id.,* 5:63-67; Fig. 3.) Further, the desktop computer runs a first application as claim 17 requires: a "web browser 152" such as "Netscape Navigator™" and a cooperating "base system 146" that facilitates synchronization. (*Id.*, 3:4-10, 33-36; 4:22-34; *see also* Fig. 1.) The web browser and base system "may be … stored in the data storage device 330 and loaded into the RAM 335 for execution." (*Id.*, 4:22-34; 6:1-10; *see also* Ex. 1003, ¶¶ 325-331.)

Id. The cited passages in Mendez support Petitioner's contentions as to this limitation and we rely on and adopt Petitioner's showing as to this limitation in making our finding that this limitation is taught by the cited art.

a second client device comprising one or more processors and memory, the second client device comprising a second application program stored in the memory of the second client device and executed by the second client device,

Petitioner relies on Mendez for teaching all the elements of this limitation. Pet. 51–52. The Petition states:

> Mendez's system also includes a second client device: a "remote terminal 102" that "may include a smart telephone, a Personal Data Assistant (PDA) …, a laptop computer, *etc.*" (Ex. 1004, 3:57-65.) The second device can also be a "fully configured PC." (*Id.*, 4:63-67.) Regardless of its form, the remote terminal 102— like the desktop computer 134—will include both a CPU and memory. (*See id.* at 5:6-27; 5:63-6:17; *see also* Ex. 1003, ¶¶ 333-334.) Further, the remote terminal also runs a second application: a "service engine 154" such as "the Internet Explorer™ web browser" and its own cooperating "base system" to facilitate synchronization. (Ex. 1004, 3:42-51, 4:46-49; *see also* Ex. 1003, ¶¶ 332-335.)

Id. The cited passages in Mendez support Petitioner's contentions as to this limitation and we rely on and adopt Petitioner's showing as to this limitation in making our finding that this limitation is taught by the cited art.

wherein the first application program of the first client device is configured to:

authenticate with a server for synchronizing with a set of bookmarks stored in a server-side storage of the server;

Petitioner relies on Mendez for teaching all the elements of this limitation. Pet. 52. The Petition states:

> This is taught by Mendez for the same reasons discussed in connection [with the first] limitation [ ] of claim 1. Again, each device in Mendez's system runs an application that permits bookmark creation, modification, and synchronization. This includes, for instance, the "base system" and "web browser" running on Mendez's desktop computer. (*See* Ex. 1004, Fig. 1.) Further, this application includes "routines" for opening a "secure communications channel" between Mendez's client devices and remote global server 106 before engaging in bookmark synchronization. And, these "routines" entail the performance of "user identification and authentication." (Ex. 1004, 6:18-35 (noting that the "base system" includes the "communications module" that runs identification/authentication routines); 9:23-25 (noting that identification/authentication occurs before synchronization).) Further, the web browsers running on Mendez's desktop computer or remote terminal themselves engage in further authentication by appending "user identification (ID)" information to each synchronized bookmark. (*See id.,* 8:47-63; *see also supra* Section VII.C.1.a.[1-1]; Ex. 1003, ¶¶ 336-339.)

Id. The cited passages in Mendez support Petitioner's contentions as to this limitation and we rely on and adopt Petitioner's showing as to this limitation in making our finding that this limitation is taught by the cited art.

receive an input via an interface of the first client device, the input comprising an instruction to the first client device to modify a set of bookmarks stored in a client-side storage of the first client device, the client-side storage remote from the server-side storage; and

Petitioner relies on Mendez for teaching all the elements of this limitation. Pet. 53. The Petition states:

> This is taught by Mendez for the same reasons explained in connection with [the second, third, and fourth] limitations [ ] of claim 1. In particular, Mendez's desktop computer 134 locally stores a set of bookmarks as part of workspace data 136. It also runs a web browser that presents a user with a graphical user interface with which the user can interact with an input device (like a mouse or keyboard) to provide instructions for purposes of adding, modifying, or deleting bookmarks. (*See supra* Sections VII.C.1.a.[1-2]-[1-3].) Further, Mendez's remote global server 106 includes its own storage allowing it to store a synchronized set of bookmarks as part of workspace data 120. (*See supra* Section VII.C.1.a.[1-4]; Ex. 1003, ¶¶ 340-342.)

Id. The cited passages in Mendez support Petitioner's contentions as to this limitation and we rely on and adopt Petitioner's showing as to this limitation in making our finding that this limitation is taught by the cited art.

transmit, from the first client device and to the server, an indication to modify the set of bookmarks stored in the server-side storage, and

Petitioner relies on Mendez for teaching all the elements of this limitation. Pet. 53–54. The Petition states:

> If changes are made in Mendez's "workspace data 136 or 116" (the locally stored bookmarks on either the desktop computer 134 or remote terminal 102), then the "workspace data 120" (the remotely stored bookmarks on global server 106) is updated. (Ex. 1004, 9:62-10:1; Fig. 7.) This synchronization and server-side bookmark updating can be accomplished by "forwarding the modified version" of the complete set of bookmarks, or "forwarding only the changes made" from the desktop computer 134 to the global server 106.

> (*Id.*, 7:33-48.) Further, in addition to the modified bookmarks themselves, "version information" is also transmitted so as to allow for a determination of how a synchronized bookmarks "have been modified." (*Id.*, 7:21-32; *see also* 5:40-62, 9:37-41; *supra* Section VII.C.1.a.[1-4]; Ex. 1003, ¶¶ 343-346.)

Id. The cited passages in Mendez support Petitioner's contentions as to this limitation and we rely on and adopt Petitioner's showing as to this limitation in making our finding that this limitation is taught by the cited art.

wherein the second application program of the second client device is configured to:
authenticate with the server for synchronizing with the set of bookmarks stored in the server-side storage of the server;

Petitioner relies on Mendez for teaching all the elements of this limitation. Pet. 54. The Petition states:

> Both Mendez's desktop computer 134 (the first client device) and the remote terminal 102 (the second client device) include web browsers / base systems that run user identification and authentication routines before synchronizing with global server 106. (*See* Ex. 1004, 4:47-59; 6:30-35; 9:23-25; Fig. 7; *see also* 4:23-28, 6:18-26, 8:16-22; *supra* Section VII.C.1.a.[1-1].) Further, the browser on the remote terminal—like the browser on the desktop computer—also appends user identification information to each synchronized bookmark. (*See* Ex. 1004, 8:47-63.) Because each of the user's devices is identified in this manner, Mendez's system is able to synchronize the user's bookmarks across all the different devices the user uses. (*See id.*, 1:49-56, 1:59-66, 2:18-23, 5:1-5; *see also* Ex. 1003, ¶¶ 347-349.)

Id. The cited passages in Mendez support Petitioner's contentions as to this limitation and we rely on and adopt Petitioner's showing as to this limitation in making our finding that this limitation is taught by the cited art.

receive, at the second client device and from the server, an indication to modify a set of bookmarks stored in a client-side storage of the second client device, the client-side storage remote from the server-side storage;

Petitioner relies on Mendez for teaching all the elements of this limitation. Pet. 54–55. The Petition states:

> Once Mendez's global server 106 is synchronized with desktop computer 134 (the claimed first client device), Mendez's system will recognize that the "workspace data 120" (the remotely stored bookmarks on the global server 106) have been modified, leading it to update "the outdated workspace element in the workspace data … 116" (the locally stored bookmarks on remote terminal 102, the claimed second client device). (Ex. 1004, 9:55-62; Fig. 7.) Again, this updating can occur via the "forwarding" of both the changes/modifications from the global server to the remote terminal, along with the version information that indicates what changes/modifications have been made. (*See id.*, 7:21-48.) Thus, because Mendez's system "[s]ynchronizes … workspace data 116 and 136" (on the client devices) "with the … workspace data 120" (on the global server), it also "indirectly synchronizes workspace data 136 with workspace data 116." (*Id.*, 5:1-5; *see also* Ex. 1003, ¶¶ 350-353.)

Id. The cited passages in Mendez support Petitioner's contentions as to this limitation and we rely on and adopt Petitioner's showing as to this limitation in making our finding that this limitation is taught by the cited art.

modify, responsive to the indication to modify the set of bookmarks received from the server, the set of bookmarks stored in the client-side storage of the second client device; and

Petitioner relies on Mendez for teaching all the elements of this limitation. Pet. 55. The Petition states that this limitation "is taught by Mendez for the same reasons discussed in connection with [the immediately previous] limitation." *Id.* (citing Ex. 1003, ¶ 354). The passages in Mendez cited in respect to the immediately previous limitation support Petitioner's

contentions as to this limitation and we rely on and adopt Petitioner's showing as to this limitation in making our finding that this limitation is taught by the cited art.

present through a single interface of the second client device, in response to a query from a user, a combined search results set generated via one or more search sub-processes, the combined search results set including at least two of:
one or more favorite items from the set of bookmarks synchronized for the user;
one or more search results from a first global index; or
one or more search results from a second global index.

Petitioner relies on Mendez and Jain for teaching the elements of this limitation. Pet. 55–56. The Petition states:

> This is taught by Mendez and Jain for the same reasons explained in connection with [the last] limitation [ ] of claim 1. Mendez explains that each of its client devices includes a web browser and stores a synchronized set of bookmarks. And, Jain teaches a system and method that allows a user to query a search engine. In response, the search engine provides and displays to the user a combined search result that includes matches from both (1) the user's own bookmarks, and (2) a general index of the Web. (*See supra* Section VII.C.1.a.[1-5]; Ex. 1003, ¶¶ 355-358.)

Id. The passages in Mendez and Jain cited in respect to the last limitation of claim 1 support Petitioner's contentions as to this limitation and, for the reasons discussed above in connection with the last limitation of claim 1, we rely on and adopt Petitioner's showing as to this limitation in making our finding that this limitation is taught by the cited art.

Patent Owner argues that does not teach the "first application program" and the "second application program" of claim 17 because "Mendez does not explicitly teach combining a web browser with the base system and the Petition does not provide a motivation to combine the web

browser with the base system." Resp. 29. Specifically, Patent Owner criticizes Petitioner's mapping of the "first application program" to the combination of a web browser such as Netscape Navigator™ and a cooperating base system that facilitates synchronization and of the "second application program" to the combination of a web browser such as Internet Explorer™ and a cooperating base system that facilitates synchronization. *Id.* Patent Owner contends that "the web browser and the base system of Mendez are independent applications with independent functions" and that "a web browser stores data, such as bookmarks, and the base system facilitates synchronization of data." *Id.* at 30. The Patent Owner argues that, "[t]he Petition does not address that it maps of combination of two individual applications in Mendez to a single element in the claim at all, let alone provide a reason why a person would be motivated to do so." *Id.*

Petitioner responds that "nothing about the claim requires the 'first [or second] application program' to be a single piece of software" and that this interpretation of claim 17 is contrary to the description of the invention in the Specification of the '375 patent. Reply 14 (citing Ex. 1001, 3:53–58). In describing "application programs" suitable for use in the invention, the passage in the Specification of the '375 patent that Petitioner cites is part of a passage that provides:

> In general, a client device 102a may be any type of processor-based platform that is connected to a network 106 and that interacts with one or more application programs. Client devices l02a-n may operate on any operating system capable of supporting a browser or browser-enabled application, such as Microsoft® Windows® or Linux. The client devices l02a-n shown include, for example, personal computers executing a browser application program such as Microsoft Corporation's Internet Explorer™, Netscape Communication Corporation's Netscape Navigator™, and Apple Computer, Inc.'s Safari™.

Ex. 1001, 3:48–58. We agree with Petitioner that claim 17 may not be distinguished from the prior art on this basis as the '375 patent discloses that the "application programs" suitable for use in the invention specifically include the web browsers taught for use in Mendez (Netscape Navigator™ and Internet Explorer™) that are designed to operate with a client device operating or base system.[16] Furthermore, as Petitioner points out, Mendez teaches a combination of its web browsers with its operating or base systems. Reply 15 ("Mendez explains that the 'base system' is specifically designed and operates to 'manage' 'workspace data' that includes bookmarks created by web browsers.") (citing Ex. 1004, 4:22–30, 5:20–54, 6:49–53). Accordingly, we reject this argument.

Summary

In summary, the cited art supports Petitioner's showing that Mendez and Jain teach all the limitations of claim 17. Patent Owner's arguments to the contrary are unavailing. The clear preponderance of the evidence supports our findings that the Mendez-Jain combination teaches all the elements of claim 17 of the '375 patent.

F. Discussion of Dependent Claims 2–11 and 13–19

As noted above, Petitioner also challenges dependent claims 2–11 and 13–19 as obvious over Mendez and Jain. *See* Pet. 5. Petitioner directs us to where Mendez and Jain teach or suggest each of the limitations recited in these claims. *See id.* at 41–57. First and foremost, Patent Owner relies on its arguments as to claims 1 and 17 in disputing the challenges in the Petition to these dependent claims. *See* Resp. 45 ("Claims 2-11, 13-16, and 18–19

[16] Patent Owner did not argue that "application program" as used in claim 17 should be construed in a way that would support this argument. *See* Resp. 5.

[i.e., all the challenged dependent claims except claim 20] are not rendered obvious for the simple reason that Mendez in combination with Jain does not render obvious claims 1 and 17 from which they depend."). As discussed above, we find the Petitioner establishes that the Mendez-Jain combination teaches all the elements of independent claims 1 and 17.

In addition and specifically, with regard to dependent claims 4, 5, and 19, which recite "an identifier to an audio file" (claims 4 and 5 (Ex. 1001, 16:16–21)) or "one or more identifiers of one or more audio files" (claim 19 (*id.* at 18:30–38)), Patent Owner argues that the cited art fails to teach these limitations. Resp. 45–47. For its part, Petitioner relies on its showing as to claim 4 for claims 5 and 19. *See* Pet. 43 (claim 5), 56–57 (claim 19). With regard to claim 4, the Petition states:

> Mendez's system allows for the synchronization of web browser bookmarks between multiple client devices. (*See, e.g.,* Ex. 1004, 1:63-65, 5:1-5, 6:4-17.) Jain explains that a conventional "bookmark" "allows users to store the URLs of selected Web pages." (Ex. 1005, 2:19-21.) And, these bookmarked pages can include "information, applications, applets and other video and audio resources (collectively referred to … as 'files')" all of which are "delivered from a Web server to a Web browser on a user's computer." (*Id.*, 1:66-2:3; *see also id.*, 2:3-7 (noting that a "Web page is conventionally formatted via a standard page description language such as HyperText Markup Language (HTML), and typically displays text and graphics, and can play sound…") Thus, one of ordinary skill in the art would have understood that the bookmarks of Mendez and Jain—like all bookmarks—could refer either directly to an audio file accessible via the Web, or a Web page that includes audio. (*See* Ex. 1003, ¶¶ 254-261.)

Id. at 42–43. We have considered the evidence cited by Petitioner. Based on this evidence, we find that the combination of Mendez and Jain teaches

or suggests the additional elements of claims 4, 5, and 19.

Patent Owner also contends specifically with regard to claim 15 that "Mendez in combination with Jain also fails to teach 'the client device is associated with a valid user identifier' as recited in claim[ ] 15." Resp. 15. With regard to claim 15, the Petition states:

> Claim 15 depends on claim 1 and further requires that "the client device is associated with a valid user identifier and the one or more other client devices are associated with the valid user identifier." Mendez's system allows a "client user" to "synchronize workspace data" like bookmarks between different user devices at home, work, *etc.* (Ex. 1004, 1:63-65, 2:20-23.) This can only occur if the various user devices are all identified as associated with a particular user. Thus, as part of its synchronization process, Mendez engages in "user identification" and "authentication." (*Id.*, 6:30-35; *see also* 9:23-25; Fig. 7.) This identification/authentication process will be performed by routines run by the communication modules/base systems of the desktop computer, the remote terminal, and any other devices the user wishes to synchronize. (*See id.*; *see also* Ex. 1003, ¶¶ 305-310.) Further, Mendez also appends "user identification (ID)" information to each bookmark so as to allow the bookmarks to be synchronized between the global server 106 and the correct set of user identified devices, including the desktop computer and remote terminal. (*See* Ex. 1004, 8:57-62; Fig. 6; *see also* Ex. 1003, ¶¶ 311-313.)

Pet. 48–49. We have considered the evidence cited by Petitioner. Based on this evidence, we find that Mendez teaches all the additional elements recited in claim 15.

G. Motivation to Combine Mendez and Jain

As shown above, Mendez generally teaches synchronizing sets of favorite items or bookmarks across user devices, and Jain generally teaches combining search results of bookmarks and the internet. With regard to

motivation to combine the relevant teachings and suggestions of Mendez and Jain, Petitioner contends (Pet. 57–62 (citing Ex. 1003 ¶¶ 364–396)):

(1) "[A] POSITA would have been motivated to apply Jain to Mendez because they would have recognized that doing so would improve the ability of a user to access and search through the potentially large set of synchronized bookmarks created by Mendez's system." Pet. 57 (citing Ex. 1003 (Schmidt Decl.) ¶¶ 365–374; Ex. 1004 (Mendez) 1:49–56, 1:59–66, 2:18–23, 5:1-5, 10:36–42; Ex. 1005 (Jain), 2: 25–30, 3:2–7).

(2) "[A] POSITA would also have been motivated to apply Jain to Mendez because doing so would both improve the time efficiency and usability of Mendez's system." *Id.* at 58 (citing Ex. 1003 (Schmidt Decl.) ¶¶ 375–385; Ex. 1005 (Jain), 3:16–20).

(3) "[A] POSITA would have been further motivated to apply Jain to Mendez because doing so would have increased the functionality of Mendez's system by providing users with another, alternate means to revisit previously visited sites." *Id.* at 59 (citing Ex. 1001 ('375 patent), 1:31–49; Ex. 1003 (Schmidt Decl.) ¶¶ 386–391; Ex. 1005 (Jain), 2:65–3:2).

(4) "A POSITA would also have been motivated to combine Mendez and Jain because both relate to functionality provided by web browsers: bookmarking and Web searching." *Id.* at 60 (citing Ex. 1003 (Schmidt Decl.) ¶¶ 392–396; Ex. 1004 (Mendez), 1:41–56, 1:59–66, 2:18–25, 5:1–5; Ex. 1005 (Jain), 2:52–3:20).

And, Petitioner contends that "[o]ne of ordinary skill in the art would also have had a reasonable expectation of success when combining Mendez and Jain." *Id.* at 61 (citing Ex. 1003 (Schmidt Decl.) ¶¶ 397–399; Ex. 1004

(Mendez), 1:40–56, 3:33–37, 3:42–51; Ex. 1005 (Jain), 1:58–65, 2:55–61). Petitioner supports these contentions with detailed argument and citations to the asserted art, Mendez and Jain, and the Declaration of Dr. Schmidt. *See id.* at 57–62.

Patent Owner argues that each of the four motivations to combine set forth in the Petition "falls short of providing a legally sufficient basis to combine Mendez and Jain to arrive at the claimed invention." Resp. 33. First, Patent Owner argues that, "the Petition repeatedly fails to provide a legally sufficient basis to combine Mendez and Jain by providing what the references or a person of skill 'could' do rather than 'would' do."[17] *Id.* (capitalization in heading omitted). In response to this argument, Petitioner argues that it is factually incorrect and contradicted by the Petition. Reply 16–18. In the Reply, the Petitioner states:

> Patent Owner begins by spending pages arguing that the petition only alleged that a POSITA "could" combine Mendez and Jain but purportedly did not argue that this combination "would" be made. ([Resp.] 33-35.) Rather than addressing the substance of the Petition's argument, Patent Owner simply collates the various instances of the word "could" in the Petition. (*See id.*) This amounts to nothing more than a cherry picking of language that turns a blind eye to what the Petition actually argued. The Petition did not simply list out potential things that a POSITA "could" have done with the teachings of Mendez and Jain. Instead, it explicitly stated that these teachings "would" have led a POSITA to the claimed subject matter. *See, e.g.,* Petition at 57 ("a POSITA ***would have been motivated*** to apply Jain to Mendez…"); [58 similar;] 59 (similar); 60 (similar).

[17] "[O]bviousness concerns whether a skilled artisan not only could have made but ***would*** have been motivated to make the combinations or modifications of prior art to arrive at the claimed invention." *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1075 (Fed. Cir. 2015) (emphasis added).

Id. at 16. We agree with Petitioner and reject Patent Owner's argument. As our quotes from the Petition above show, Petitioner provided multiple reasons why a skilled artisan "would" have been motivated to combine the teachings of Mendez and Jain. *See* Pet. 57–60.

Patent Owner argues that "improving the ability to access and search through a large set of bookmarks does not provide a sufficient motivation to combine." Resp. 35 (capitalization in heading omitted). Patent Owner contends that:

> At most, this argument provides that a person of skill would be motivated to find a way to search a user's bookmarks; it does not provide a reason why a person of skill would be motivated to 1) search a user's bookmarks while also conducting a general Internet search and 2) present those as a combined search result set, as proposed under the Petition's mapping. Madisetti Decl., ¶ 77.

Id. at 36. This appears to be an acknowledgment that Petitioner's first motivation to combine has, at least, some validity. And, Petitioner responds that (as shown above) Jain teaches conducting a general Internet search and presenting the combined search results of a bookmark search and web search and that "Patent Owner ignores and does not even address the Petition's other evidence." Reply 18. The Reply here states:

> For instance, the Petition explained that a POSITA would have considered it obvious to display bookmark and web results at the same time because doing so simplifies the visual display and digestibility of the result set. (Petition at 59 (citing Ex. 1003, ¶¶ 383-385).) It also explained that a combined result set would save time by eliminating the need for the user to manually sort through, synergize, and ascertain the relative significance of two separate sets of results. (*Id.*) Patent Owner did not respond to or dispute these points.

Id. We agree with Petitioner and do not agree with this argument from Patent Owner.

Patent Owner also argues that "improving time efficiency and usability does not provide a sufficient motivation to combine" Resp. 38 (capitalization in heading omitted). The second motivation to combine in the Petition is, "a POSITA would also have been motivated to apply Jain to Mendez because doing so would both improve the time efficiency and usability of Mendez's system." Pet. 58. In support, Petitioner cites this passage from Jain: "[a]ccordingly, the present invention can help save both user time as well as server processing time by performing searches of a user's stored bookmarks before a search of Internet resources is conducted." Ex. 1005, 3:16–20. This express teaching supports finding a motivation to combine the relevant teachings of the cited references as set forth in Petitioner's second motivation to combine. *See Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.*, 520 F.3d 1358, 1364–65 (Fed. Cir. 2008) (noting that the teaching-suggestion-motivation test, flexibly applied, remains an important tool in an obviousness analysis). In further support, Petitioner argues:

> When using only Mendez's system, a user must perform two separate steps to search both bookmarks and the general Web. First, the user would need to manually peruse the bookmarks. Then, the user would need to perform a standard Web search using a search engine. (*See id.*, ¶¶ 375-379) . . . Consistent with this, a POSITA would have understood that Jain improves Mendez (and saves user time) by combining the two separate search steps Mendez by itself requires into one. In other words, rather than separately perusing bookmarks and conducting a Web search, the user would only need to perform a single search that returns results both from the user's own bookmarks and the general Web. (*See* Ex. 1003, ¶¶ 380-382.)

Pet. 58–59. This argument is supported by expert testimony that is detailed, well-reasoned, and persuasive. *See* Ex. 1003 ¶¶ 375–385. We do not find Patent Owner's argument with regard to Petitioner's second motivation to combine to be persuasive.

Patent Owner argues that "alternate means to revisit previously visited sites does not provide a sufficient motivation to combine." Resp. 40 (capitalization in heading omitted). Petitioner's third motivation to combine is "a POSITA would have been further motivated to apply Jain to Mendez because doing so would have increased the functionality of Mendez's system by providing users with another, alternate means to revisit previously visited sites." Pet. 59 (citing Ex. 1003 (Schmidt Decl.) ¶¶ 386–391; Ex. 1005 (Jain), 2:65–3:2). Patent Owner argues, "[t]he Petition's motivation to combine only provides a rationale as to why a person of skill would have been motivated to search the bookmarks of Mendez but not why a person of skill would be motivated to search favorite items and a global index" (Resp. 41) and "[t]here is no dispute that searching bookmarks was known at the time the '375 Patent was filed" (*id.* (citing Ex. 1001, 2:6–15)). The Petition states:

> The '375 patent recognizes that "a common use of bookmarks is for navigation to sites that search engines … do not rank highly or that are otherwise hard to find via a search query." (Ex. 1001, 1:46-49.) Despite the fact that bookmarked sites may be hard to find using search engines, the '375 patent also recognizes that users often still attempt to employ "search engines" to "revisit[]" Web pages of interest. (*Id.*, 1:31-45.) Application of Jain to Mendez improves the usability of Mendez by ensuring that the user is able to re-access and revisit a bookmarked page even if the user employs a search engine—as users apparently oft do—instead of accessing the bookmark directly. (*See id.*, ¶¶ 390-391.) Indeed, Jain expressly notes that its "invention" is meant to increase the usefulness of results

> when a "user … conduct[s] a search of the Web … for a particular subject matter (or for a particular Web site) via a search engine even though the user may have relevant URLs stored as bookmarks within his or her browser." (Ex. 1005, 2:65-3:2.)

Pet. 59–60. We find this argument persuasive and to support the third motivation to combine, because we agree it would increase the usefulness of the search engine.

And, Patent Owner argues that merely because Mendez and Jain relate to functionality provided by web browsers is an insufficient reason to add specific features from one reference into another. Resp. 43 (citing *Johns Manville Corp. v. Knauf Insulation, Inc.*, IPR2018-00827, Paper 9, 10 (PTAB Oct. 16, 2018) (informative)). We accept this legal principle but find it inapplicable to Petitioner's showing with regard to motivation to combine. Petitioner provides much more in support of its fourth motivation to combine and its overall showing on combining the relevant teachings of the references than "the mere or alleged existence of similarities in [the cited] references." *Id.*; *See also* Reply 22 ("But the Petition did not point to the similarities between these references alone. Instead, this is only one of many reasons why a POSITA would have combined these references"). We find more applicable the passage from *KSR*, 550 U.S. at 406, that says, "when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious," which is cited by Petitioner in support of the fourth motivation to combine. *See* Pet. 61.

After considering all the arguments and weighing all the evidence of the issue of motivation to combine the relevant teachings of the cited

references, we are persuaded by Petitioner's contentions and evidence on the issue of motivation to combine the relevant teachings of Mendez and Jain. We find the evidence supports a finding that the proposed combination would have been within the capabilities of the skilled artisan. *See KSR*, 550 U.S. at 421 ("A person of ordinary skill is also a person of ordinary creativity, not an automaton."). Patent Owner does not argue that combining the relevant teachings of the cited references as in the methods and systems recited in the challenged claims would have been "uniquely challenging or difficult for one of ordinary skill in the art." *See Leapfrog Enters., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1162 (Fed. Cir. 2007) (citing *KSR*, 550 U.S. at 418–19). Based on the totality of the evidence, we agree with the Petitioner that "the Petition explains at length why a POSITA would have considered it beneficial to use Mendez's and Jain's systems in combination," because "doing so would allow for searching of a potentially large set of bookmarks, would provides users with an alternate means for re-accessing previously visited sites, would simplify how search results are presented, and would save user time by reducing the number of needed search steps." Reply 20 (citing Pet. 57–61). We agree with Petitioner that a skilled artisan would have had a motivation to combine the teachings in Mendez relating to synchronizing sets of favorite items or bookmarks across user devices and the teachings in Jain relating to combining search results of bookmarks and the internet. The preponderance of the evidence shows a motivation to combine Mendez and Jain to arrive at the subject matter recited in the challenged claims of the '375 patent.

H. Analysis of Claim 20

Petitioner contends that dependent claim 20[18] would have been obvious in view of Mendez, Jain, and Nakagawa. Pet. 62–65. Claim 20 recites:

> 20. The system of claim 19**,** wherein the second client device is further configured to:
>
> display, via an interface of the second client device, an indication of modification of bookmark information for at least one of the one or more audio files identified by the set of bookmarks stored in the client-side storage of the second client device.

Ex. 1001, 18:39–46. Patent Owner does not present any arguments specific to claim 20 or specific to Petitioner's argument and evidence relating to claim 20. *See* Resp. 47–48. We provide a summary of the teachings of Nakagawa and then discuss Petitioner's showing as to claim 20.

1. Nakagawa (Ex. 1006)

Nakagawa is titled "Data Synchronization System, Apparatus Used for the System, and Data Synchronization Method." Ex. 1006, code (54). Nakagawa "relates to a data access system, and particularly to a data access system, in which data stored in a data server device can be utilized as if the data is stored in a client device." *Id.* ¶ 1.

Nakagawa describes:

> a data server device includes a server data storing portion storing server data to be utilized by one or a plurality of client device(s) and a correlation between the server data and the client device(s), and a client storage data managing portion connected to the server data storing portion and managing client data currently stored in the client device.

[18] Claim 20 is dependent on claim 19, which is dependent on independent claim 17. Ex. 1001, 18:30–46.

Id. ¶ 17. Nakagawa states that the server data can include a configuration file of an application program and that "[b]y sharing the configuration file of the program, it becomes easy, for example, to share personal setting of a program tool bar and bookmarks between the client devices of the same user." *Id.* ¶¶ 60–61.

Nakagawa further describes a data synchronizing method that:

> includes the steps of determining a state of matching between the server data stored in the data server device and the client data stored in the client device by the data server device; providing a notification about data updating to the data server device when the client data stored in the client device is updated; providing a notification about the fact of updating of the data to other client device(s) storing data, as the client data, including an updated portion of the data when the data server device receives the notification about the data updating from the client device; and updating the client data of the other client device(s).

Id. ¶ 62.

2. Discussion of Claim 20

With regard to claim 20, the Petition states:

> Nakagawa—like Mendez—relates to a system for synchronizing files between multiple client devices connected to a remotely located server. (*See* Ex. 1006, ¶¶ [0046]-[0048], [0062]-[0063] [0148], [0156]-[0158]; Figs. 1, 5.) The connected devices can be a "personal computer," "PDA," or cellular phone." (*Id.*, ¶¶ [0151], [0202].) The synchronized data can include locally stored "bookmarks." (*Id.*, ¶¶ [0061], [0314].) Further, in addition to synchronizing files like bookmarks between user devices, Nakagawa also "[n]otif[ies] the user about the fact of the update of the client data." (*Id.*, ¶ [0093]; *see also* ¶¶ [0054]-[0055], [0062]-[0063].) According to Nakagawa, the fact that an update has occurred can be relayed to the user by a "display," an "icon," or another notification. (*Id.*, ¶¶ [0094], [0180].) And, different "level[s] of attracting a user's attention" can be employed "depending on the degree of importance of the data" being updated. (*Id.*; *see*

> *also* ¶¶ [0083]-[0084].) Nakagawa's update notification is the "display" of an "indication of modification" that claim 20 requires. (*See* Ex. 1003, ¶¶ 409-417.)

Pet. 63–64. We find Petitioner's showing as to claim 20 to be well-supported and persuasive.

With regard to motivation to "apply Nakagawa's update notifications to the system of Mendez and Jain," Petitioner contends "that use of Nakagawa's update notification with Mendez's bookmark synchronization would improve the user experience" because, in use, Nakagawa's notification will confirm for the user that synchronization has been completed such that the new bookmark is present." Pet. 64. (citing Ex. 1003 ¶¶ 418–424). And, "via its use of a display, icon, or other attention-grabbing mechanism" application of Nakagawa would allow the user to readily and quickly identify the new bookmark." *Id.* With regard to reasonable expectation of success, the Petition states, "a POSITA would have every reason to believe that Nakagawa's notification system would be compatible and could be used by Mendez and Jain." *Id.* at 65 (citing Ex. 1003 ¶¶ 425–427)

As noted previously, Patent Owner does not dispute Petitioner's showing specific to claim 20 or Nakagawa. *See* Prelim. Resp. 47–48. Patent Owner's discussion of claim 20 and the Mendez-Jain-Nakagawa combination is very short and Patent Owner argues only that consideration of Nakagawa does cure the alleged deficiencies in the Petition related to claim 17 and the Mendez-Jain combination. *See id.* Patent Owner's entire argument as to claim 20 and the Mendez-Jain-Nakagawa combination is:

> The Petition argues that claim 20 is obvious over Mendez and Jain when considered in view of Nakagawa. Pet., 62. Claim 20 is dependent on claim 19, which is dependent on

> independent claim 17. As explained above, Petitioner has not met its burden of showing every element of claim 17 is taught by Mendez or Jain, nor has Petitioner presented a sufficient rationale to combine Mendez and Jain to render claim 17 obvious. Madisetti Decl. [Ex. 2003], ¶ 96. The addition of Nakagawa cannot cure these deficiencies. *Id.*

Id. We reject this argument for the reasons discussed above with regard to claim 17 and the Mendez-Jain combination.

3. Summary as to Claim 20

We find that Petitioner has shown all the elements of claim 20 were taught by the cited art and has sufficiently established a motivation to combine the relevant teachings of the cited art with a reasonable expectation of success. We conclude that Petitioner has established by a preponderance of the evidence that claim 20 of the '375 patent would have been obvious in view of Mendez, Jain, and Nakagawa.

III. CONCLUSION[19]

For these reasons, we conclude that Petitioner has met its burden of showing, by a preponderance of evidence, that claims 1–11 and 13–20 of the '375 patent are unpatentable. Claims 1–11 and 13–19 would have been obvious in view of Mendez and Jain and claim 20 would have been obvious in view of Mendez, Jain, and Nakagawa.

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[19] Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding. See* 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. § 42.8(a)(3), (b)(2).

IV. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, based on a preponderance of the evidence, claims 1–11 and 13–20 of U.S. Patent No. 10,140,375 B2 have been shown to be unpatentable; and

FURTHER ORDERED that, because this is a final written decision, parties to this proceeding seeking judicial review of our decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

In summary:

Claims	**35 U.S.C. §**	**Reference(s)/Basis**	**Claims Shown Unpatentable**	**Claims Not shown Unpatentable**
1–11, 13–19	103(a)	Mendez, Jain	1–11, 13–19	
20	103(a)	Mendez, Jain, Nakagawa	20	
Overall Outcome			1–11, 13–20	

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US010140375B2

(12) **United States Patent**
Badros et al.

(10) **Patent No.: US 10,140,375 B2**
(45) **Date of Patent: *Nov. 27, 2018**

(54) **PERSONALIZED NETWORK SEARCHING**

(71) Applicant: **Google LLC**, Mountain View, CA (US)

(72) Inventors: **Gregory Joseph Badros**, Palo Alto, CA (US); **Stephen Lawrence**, Palo Alto, CA (US)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **15/854,208**

(22) Filed: **Dec. 26, 2017**

(65) **Prior Publication Data**

US 2018/0121556 A1 May 3, 2018

Related U.S. Application Data

(63) Continuation of application No. 15/492,513, filed on Apr. 20, 2017, which is a continuation of application
(Continued)

(51) **Int. Cl.**
G06F 17/00 (2006.01)
G06F 17/30 (2006.01)
G06Q 30/02 (2012.01)

(52) **U.S. Cl.**
CPC .. ***G06F 17/30867*** (2013.01); ***G06F 17/30893*** (2013.01); ***G06Q 30/0201*** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC G06F 17/30893; G06F 17/30867; G06Q 30/0241; G06Q 30/0201
See application file for complete search history.

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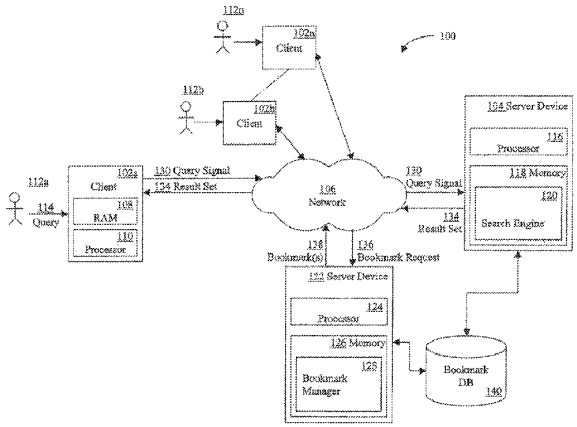
(57) **ABSTRACT**

Personalized network searching, in which a search query is received from a user, and a request is received to personalize a search result. Responsive to the search query and the request to personalize the search result, a personalized search result is generated by searching a personalized search object. Responsive to the search query, a general search result is generated by searching the general search object. The personalized search result and the general search result are provided to a client device, an advertisement is selected based at least in part upon the personalized search object, and the advertisement, the personalized search result, and the general search result are displayed.

20 Claims, 4 Drawing Sheets



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Related U.S. Application Data

No. 14/516,019, filed on Oct. 16, 2014, now Pat. No. 9,679,067, which is a continuation of application No. 14/074,872, filed on Nov. 8, 2013, now Pat. No. 8,886,626, which is a continuation of application No. 13/442,386, filed on Apr. 9, 2012, now Pat. No. 8,612,415, which is a continuation of application No. 13/172,961, filed on Jun. 30, 2011, now Pat. No. 8,166,017, which is a continuation of application No. 12/099,583, filed on Apr. 8, 2008, now Pat. No. 8,015,170, which is a continuation of application No. 10/726,410, filed on Dec. 3, 2003, now Pat. No. 7,523,096.

(52) **U.S. Cl.**
CPC ... ***G06Q 30/0241*** (2013.01); *Y10S 707/99933* (2013.01); *Y10S 707/99943* (2013.01); *Y10S 707/99945* (2013.01)

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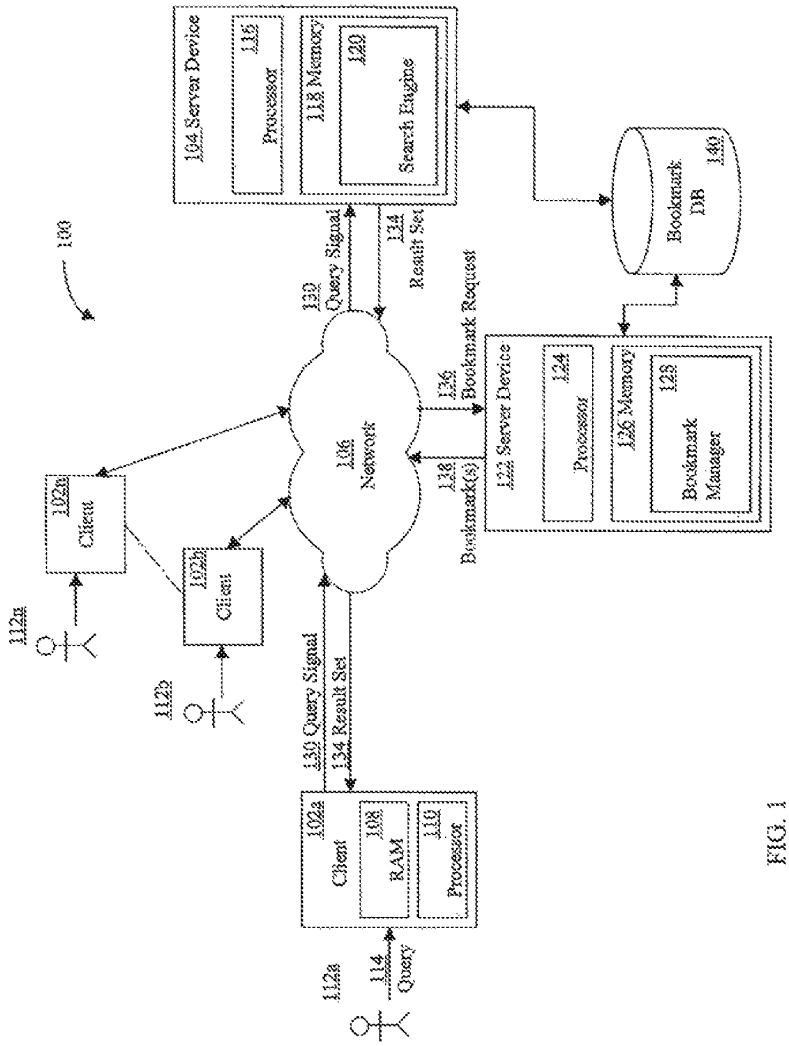
100
104 Server Device
116 Processor
118 Memory
120 Search Engine
Bookmark DB 140
132 Query Signal
134 Result Set
136 Bookmark Request
106 Network
122 Server Device
124 Processor
126 Memory
128 Bookmark Manager
138 Bookmark(s)
102a Client
102b Client
112a
112b
130 Query Signal
134 Result Set
102a Client
108 RAM
110 Processor
112a
114 Query

FIG. 1

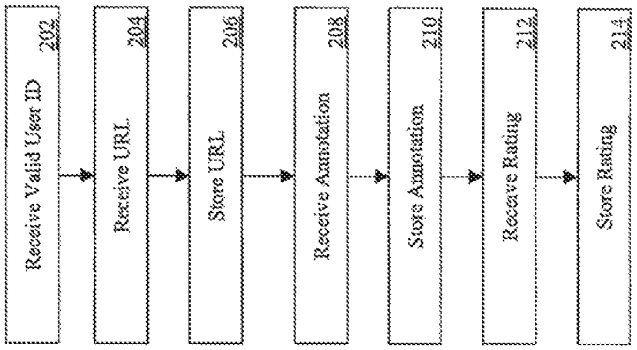
Receive Valid User ID
202
Receive URL
204
Store URL
206
Receive Annotation
208
Store Annotation
210
Receive Rating
212
Store Rating
214

FIG. 2

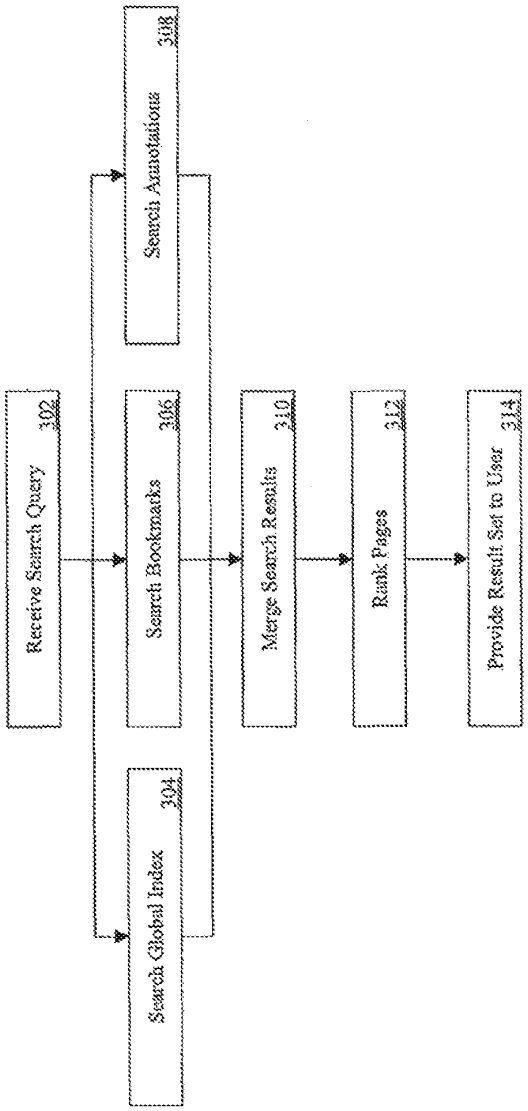

FIG. 3

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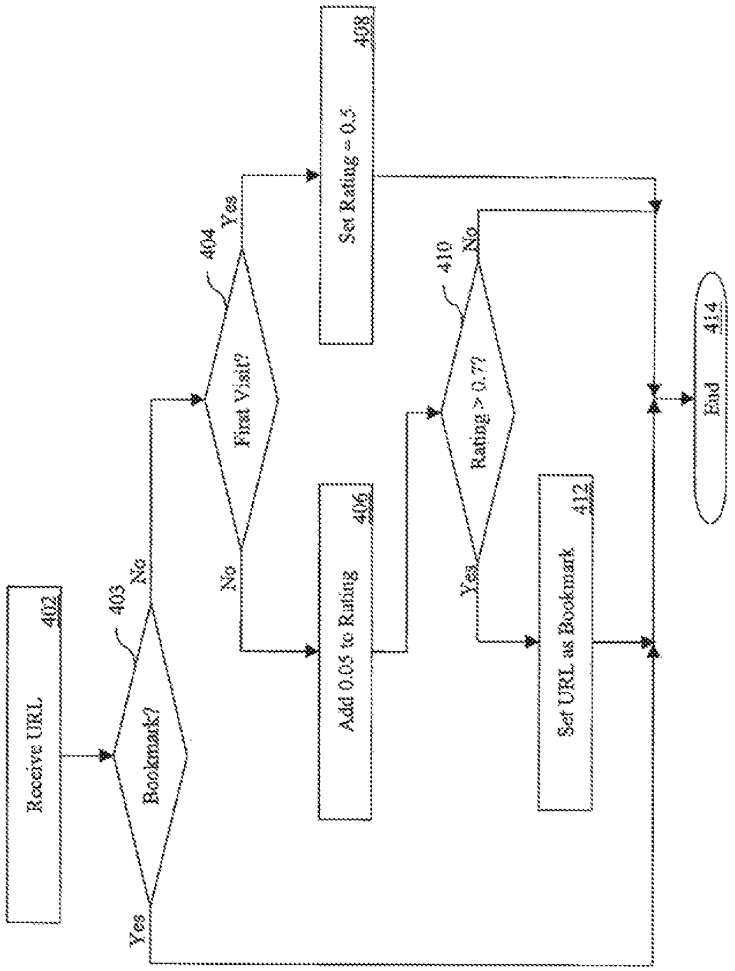
Receive URL
402
Bookmark?
403
Yes
No
First Visit?
404
Yes
No
Set Rating = 0.5
408
Add 0.05 to Rating
406
Rating > 0.77
410
Yes
No
Set URL as Bookmark
412
End
414

FIG. 4

PERSONALIZED NETWORK SEARCHING

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of U.S. patent application Ser. No. 15/492,513, filed Apr. 20, 2017, which is a continuation of U.S. patent application Ser. No. 14/516,019, filed Oct. 16, 2014, now U.S. Pat. No. 9,679,067 which is a continuation of U.S. patent application Ser. No. 14/074,872, filed Nov. 8, 2013, now U.S. Pat. No. 8,886,626, which is a continuation of U.S. patent application Ser. No. 13/442,386, filed Apr. 9, 2012, now U.S. Pat. No. 8,612,415, which is a continuation of U.S. patent application Ser. No. 13/172,961, filed Jun. 30, 2011, now U.S. Pat. No. 8,166,017, which is a continuation of U.S. patent application Ser. No. 12/099,583, filed Apr. 8, 2008, now U.S. Pat. No. 8,015,170, which is a continuation of U.S. patent application Ser. No. 10/726,410, filed Dec. 3, 2003, now U.S. Pat. No. 7,523,096, all of which are incorporated herein by reference in their entirety.

FIELD OF THE INVENTION

The present invention relates generally to methods and systems for network searching. The present invention relates particularly to methods and systems for personalized network searching.

BACKGROUND

In general, most page visits on the World Wide Web are revisits; in other words, the user is returning to a web page previously visited. As search engines have improved, many users have turned to search engines for navigating to often-visited sites, rather than typing in uniform resource locators (URLs) or using browser bookmarks. A search engine performs the search based on a conventional search method. For example, one known method, described in an article entitled "The Anatomy of a Large-Scale Hypertextual Search Engine," by Sergey Brin and Lawrence Page, assigns a degree of importance to a document, such as a web page, based on the link structure of the web page. As these navigational queries become increasingly common, users are able to learn which queries will take them to their favorite sites. Bookmarks, however, can provide a benefit to the user. For example, a common use of bookmarks is for navigation to sites that search engines (such as the Google™ Search Engine) do not rank highly or that are otherwise hard to find via a search query.

Accordingly, bookmarks that the user continues to use are a valuable resource for the user. An Internet user often has difficulty propagating bookmarks between the various machines on which the user depends. For example, many users have a computer at work and at home. Often, the bookmarks relied on in the work setting are useful at home as well. In most cases, however, the user must manually synchronize the bookmark lists of the two machines. In addition, conventional methods of organizing bookmarks tend to be limited at best, making it difficult for the user to find a favorite site.

Some users have attempted to solve the propagation problem by using a commercial product that allows the user to store bookmarks on a server on the web, such as BlinkPro (Blink.com, Inc.; www.blinkpro.com) or BookmarkTracker (BookmarkTracker.com, Inc.; www.bookmarktracker.com). Such products allow the bookmarks to be managed and utilized from a browser application. In some cases, the user

can also automatically synchronize each of the user's computers to the common list stored on-line. While storing the bookmarks on-line addresses the propagation problem, such systems fail td address the organizational problems inherent in conventional bookmarks.

Various other conventional bookmark-related software products provide the user with functionality to facilitate the use of bookmarks. For example, systems and methods for automatically organizing bookmarks on a client machine, searching previously-stored bookmarks by keyword, and integrating the back, history, and bookmark functions to improve the user's ability to visit previously visited sites have been described (see, e.g., *Integrating Back, History and Bookmarks in Web Browsers*, Kaasten, S. and Greenberg, S. (2001), In Extended Abstracts of the ACM Conference of Human Factors in Computing Systems (CHI'01), 379-380, ACM Press.). These tools, however, do not effectively leverage the user's preferences to provide personalized search results.

Thus, a need exists to provide an improved system and method for providing personalized network searching.

SUMMARY

Embodiments of the present invention provide systems and methods for personalized network searching. In one embodiment, a search engine implements a method comprising receiving a search query, determining a personalized result by searching a personalized search object using the search query, determining a general result by searching a general search object using the search query, and providing a search result for the search query based at least in part on the personalized result and the general result. An embodiment of the present invention may utilize ratings, annotations, history of use, or other data associated with the previously-identified uniform resource locator to locate and sort results.

Further details and advantages of embodiments of the present invention are set forth below.

BRIEF DESCRIPTION OF THE FIGURES

These and other features, aspects, and advantages of the present invention are better understood when the following Detailed Description is read with reference to the accompanying drawings, wherein:

FIG. **1** is a block diagram illustrating an exemplary environment in which one embodiment of the present invention may operate;

FIG. **2** is a flowchart, illustrating a method for storing bookmarks, ratings, and annotations in an embodiment of the present invention;

FIG. **3** is a flowchart illustrating a method of performing a network search in one embodiment of the present invention; and

FIG. **4** is a flowchart illustrating a process of implicitly rating a page 'One embodiment of the present invention.

DETAILED DESCRIPTION

Embodiments of the present invention comprise methods and systems for personalized network searching. In one embodiment, a search engine combines search results obtained from a global index or global indexes with those retrieved from a list of a user's favorite sites to produce a combined search result set. The combined result set may be sorted, marked, or otherwise used based on the user's

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preferences. Such an embodiment may provide the user with a mechanism to perform searches and visit favorite sites from one interface.

Referring now to the drawings in which like numerals indicate like elements throughout the several figures, FIG. **1** is a block diagram illustrating an exemplary environment for implementation of an embodiment of the present invention. The system **100** shown in FIG. **1** includes multiple client devices **102***a-n* in communication with a server device **104** over a network **106**. The network **106** shown includes the Internet. In other embodiments, other networks, such as an intranet may be used. Moreover, methods according to the present invention may operate within a single computer.

The client devices **102***a-n* shown each includes a computer-readable medium, such as a random access memory (RAM) **108** coupled to a processor **110**. The processor **110** executes computer-executable program instructions stored in memory **108**. Such processors may include a microprocessor, an ASIC, and state machines. Such processors include, or may be in communication with, media, for example computer-readable media, which stores instructions that, when executed by the processor, cause the processor to perform the steps described herein. Embodiments of computer-readable media include, but are not limited to, an electronic, optical, magnetic, or other storage or transmission device capable of providing a processor, such as the processor **110** of client **102***a*, with computer-readable instructions. Other examples of suitable media include, but are not limited to, a floppy disk, CD-ROM, DVD, magnetic disk, memory chip, ROM, RAM, an ASIC, a configured processor, all optical media, all magnetic tape or other magnetic media, or any other medium from which a computer processor can read instructions. Also, various other forms of computer-readable media may transmit or carry instructions to a computer, including a router, private or public network, or other transmission device or channel, both wired and wireless. The instructions may comprise code from any computer-programming language, including, for example, C, C++, C#, Visual Basic, Java, Python, Perl, and JavaScript.

Client devices **102***a-n* may also include a number of external or internal devices such as a mouse, a CD-ROM, DVD, a keyboard, a display, or other input or output devices. Examples of client devices **102***a-n* are personal computers, digital assistants, personal digital assistants, cellular phones, mobile phones, smart phones, pagers, digital tablets, laptop computers, Internet appliances, and other processor-based devices. In general, a client device **102***a* may be any type of processor-based platform that is connected to a network **106** and that interacts with one or more application programs. Client devices **102***a-n* may operate on any operating system capable of supporting a browser or browser-enabled application, such as Microsoft® Windows® or Linux. The client devices **102***a-n* shown include, for example, personal computers executing a browser application program such as Microsoft Corporation's Internet Explorer™, Netscape Communication Corporation's Netscape Navigator™, and Apple Computer, Inc.'s Safari™.

Through the client devices **102***a-n*, users **112***a-n* can communicate over the network **106** with each other and with other systems and devices coupled to the network **106**. As shown in FIG. **1**, a server device **104** is also coupled to the network **106**. In the embodiment shown, a user **112***a-n* generates a search query **114** at a client device **102***a*. The client device **102***a* transmits the query **114** the server device **104** via the network **106**. For example, a user **112***a* types a textual search query into a query field of a web page of a search engine interface or other client-side software displayed on the client device **102***a*, which is then transmitted via the network **106** to the server device **104**. In the embodiment shown, a user **112***a* inputs a search query **114** at a client device **102***a*, which transmits an associated search query signal **130** reflecting the search query **114** to the server device **104**. The search query **114** may be transmitted directly to the server device **104** as shown. In another embodiment, the query signal **130** may instead be sent to a proxy server (not shown), which then transmits the query signal **130** to server device **104**. Other configurations are possible.

The server device **104** shown includes a server executing a search engine application program, such as the Google™ search engine. Similar to the client devices **102***a-n*, the server device **104** shown includes a processor **116** coupled to a computer-readable memory **118**. Server device **104**, depicted as a single computer system, may be implemented as a network of computer processors. Examples of a server device **104** are servers, mainframe computers, networked computers, a processor-based device, and similar types of systems and devices. Client processor **110** and the server processor **116** can be any of a number of computer processors, such as processors from Intel Corporation of Santa Clara, Calif. and Motorola Corporation of Schaumburg, Ill.

Memory **118** contains the search engine application program, also known as a search engine **120**. The search engine **120** locates relevant information in response to a search query **114** from a user **112***a-n*.

In the embodiment shown, the server device **104**, or related device, has previously performed a crawl of the network **106** to locate articles, such as web pages, stored at other devices or systems connected to the network **106**, and indexed the articles in memory **118** or on another data storage device. Articles include, for example, web pages of various formats, such as HTML, XML, XHTML, Portable Document Format (PDF) files, and word processor, database, and application program document files, audio, video, or any other documents or information of any type whatsoever made available on a network (such as the Internet), a personal computer, or other computing or storage means. The embodiments described herein are described generally in relation to HTML files or documents, but embodiments may operate on any type of article, including any type of image.

In an embodiment of the present invention, the search engine **120** also searches a user's list of favorite sites, which personalizes the search. For example, a user's list of favorite sites may be saved as a list of bookmarks. Bookmarks are objects that include a uniform resource locator (URL) identified by a user. A bookmark may be referred to by different terms in different applications. For example, Microsoft® products often refer to bookmarks as "favorites." Similar to the client devices **102***a-n* and the server device **104**, the server device **122** shown includes a processor **124** coupled to a computer-readable memory **126**. As with server device **104**, server device **122**, depicted as a single computer system, may be implemented as a network of computer processors or may be incorporated into the server device **104**. Examples of a server device **122** are servers, mainframe computers, networked computers, a processor-based device, and similar types of systems and devices.

Memory **126** contains the bookmark manager application program, also known as a bookmark manager **128**. In the embodiment shown, the bookmark manager **128** is a C++

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program, however, the bookmark manager **128** may be constructed from various other programming languages as well.

Referring still to the embodiment shown in FIG. **1**, the bookmark manager **128** comprises an interface so that a user **112***a* may manage bookmarks on the server. For example, in one embodiment, the bookmark manager **128** provides a browser-based application that allows the user to create, modify, delete, and save bookmarks on the network. The application may comprise, for example, HTML and JavaScript, an ActiveX component, or a Java applet. The bookmarks are saved in the bookmark database **140**. In an embodiment of the present invention, the bookmark manager **128** also provides the data stored in the bookmark database **140** to the search engine **120**.

When the search engine **120** performs a search in response to the query search query signal **130**, the search engine **120** searches previously indexed articles. The search engine **120** also creates a bookmark request **136**, corresponding to user **112***a*. The bookmark manager **128** responds by sending one or more bookmarks **138** to the search engine **120**. The search engine **120** utilizes the bookmarks, **138** to search sites previously identified by the user **112***a*. The search engine then merges the results of the two searches to provide a result set **134** to the client **102***a*.

It should be noted that the present invention may comprise systems having different architecture than that which is shown in FIG. **1**. For example, in some systems according to the present invention, server device **104** and server device **122** may comprise a single physical or logical server. The system **100** shown in FIG. **1** is merely exemplary, and is used to explain the exemplary methods shown in FIGS. **2** through **4**.

In embodiments of the present invention, a user **112***a* can track their conventional browser bookmarks using server-side storage. These bookmarks can then be made available to the user on all the various computers the user uses and can be integrated with browser bookmarks and with the browser (e.g., via a toolbar). For example, a user's set of bookmarks can be primed on a server by having the user POST their bookmarks file to the server, and the user can be permitted to download the bookmarks as a bookmarks file or other related representation. Alternatively, client-side software may implicitly manage the server-side storage. In one embodiment, the bookmarks may comprise a continuous user rating, e.g., 0.0-1.0, rather than just a discrete bookmarked-or-not bit. In another embodiment, a user can integrate per-page annotations into their data regarding bookmarks or favorites. In yet another embodiment, a user can store multiple user personalities (e.g., previously defined sets of bookmarks) and can receive recommendations based on the set of bookmarks saved by users with similar tastes as derived by their bookmarks or other stored or monitored preferences.

Various methods may be implemented in the environment shown in FIG. **1** and other environments according to the present invention. For example in one embodiment, a user **112***a* enters a search query **114**, which a client **102***a* transmits as a query signal **130** to a server device **104** over a network **106**. The server device **104** executes a search engine **120**. The search engine **120** receives the query signal **130**. The search engine **120** determines a personalized result by searching a personalized search object using the search query.

Examples of a personalized search object include, for example, a list of bookmarks or favorites and the history list of a browser. The search engine **120** also determines a general search result by searching a general search object. The general search object may comprise, for example, an index of articles, such as, for example, those associated with a conventional search engine. The search engine **120** provides a search result to the user based at least in part on the personalized result and the general result. In another embodiment, the search engine **120** provides a search result to the user based solely on the personalized result.

The search engine **120** may generate the search result by combining the general results and the personalized results. The search engine may instead provide separate lists: one containing the general search result and a second containing the personalized search result. The search engine **120** transmits the search result as a result set **134** to the client **102***a*.

In one embodiment, the search engine **120** returns the list sorted as in a conventional search engine and with the personalized search results indicated in some way, such as, for example, highlighted or shown with a symbol beside the personalized search result. In another embodiment, the search engine sorts the combined results list based at least in part on a rating that the user **112***a* has associated with the uniform resource locator.

The results may be sorted in a number of ways. For example, in one embodiment, the combined results list is sorted based at least in part on an annotation or rating that has been associated with the user **112***a* and the uniform resource locator. The results may instead or further be sorted based on whether the result in the combined result list originated in the global results list or in the personalized search result. For example, the user **112***a* may wish to see their personalized results displayed at the top. The results may be instead or further sorted based on a rating of a page provided by or created for the user **112***a*. In one embodiment, rather than changing the sorting order of the pages provided in a result set, the search engine **120** marks results that originated in the user's personalized search results. A fuzzy algorithm may also be employed to sort the results. For example, the sorting of the combined results list may only slightly favor the personalized search result. In another embodiment, the results list is sorted by measures indicating user preferences. For example, if many of the user's bookmarks are computer-related, computer-related results are sorted closer to the top of the result set **134** than non-computer related results. Other operations may also be performed on the results based at least in part on user-specific information. For example, the results may be interleaved, merged where necessary or desired, presented with annotations, or presented in other ways that provide useful information to the user **112***a*.

An embodiment of the present invention may comprise features to facilitate community building. For example, in one embodiment, the uniform resource locator comprises a community bookmark. The bookmark may be shared by a set of users or may be transmitted by one user and received by another. The second user can then perform personalized queries that are based, at least in part, on the shared bookmark. In another embodiment, a cluster of users is identified based at least in part on the bookmarks and annotations that they have previously identified.

A user **112***a* may specify bookmarks explicitly. In one embodiment, the bookmarks are implicitly identified based on a measure of the behavior of the user. For example, in one embodiment, the implicit measure comprises the linger time. In other words, if a user spends a great deal of time on a site, it is identified as a bookmark for later personalized searches. In other embodiments, the implicit measure may comprise at least one of the quantity of repeat visits to the site or the

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quantity of click-throughs on the site. In one embodiment, temporal decay of ratings may be utilized so that unused or rarely used bookmarks, whether explicitly marked or implicitly marked, become unmarked over time. Other implicit measures include printing the page, saving the page, and the amount of scrolling performed on the page.

In one embodiment of the present invention, the user associates a text string with a uniform resource locator (URL). The text string may comprise, for example, a search query, a URL-format text string, or a short-hand indicator of the URL. The client **102***a* receives the personalized association data associating the text string with the URL and stores the personalized association data in a personalized search object. The client **102***a* subsequently receives an input signal comprising the search string, determines the URL associated with the text string and displays an article associated with the URL. The article may be received from a global network element, such as a web server.

FIG. **2** is a flowchart illustrating a method for storing bookmarks, ratings, and annotations in an embodiment of the present invention. In the embodiment shown, a user **112***a* navigates to a site by typing in a URL or other means. The user **112***a* determines that the site is useful and that the user **112***a* will revisit the site. Accordingly, the user **112***a* bookmarks the site using a bookmark manager **128**. The user **112***a* may access the bookmark manager **128** in various ways. For example, in one embodiment, the user **112***a* accesses a client-side application via a built-in user-interface element or one available via a toolbar or other available plug-in in a browser executing on the client **102***a*. The button causes a popup window to be displayed in which the user enters an annotation and rating. When the user clicks a submit button, the information is submitted to the bookmark manager **128** for storage as a bookmark in the bookmark database **140**.

In the embodiment shown, the bookmark manager **128** first receives a valid user identifier (ID) **202** from the client **102***a*. Users who desire synchronization across different browsers/computers or other types of personalization need to identify themselves to the bookmark manager **128** to some extent so that the bookmark manager **128** has a primary key with which to store a user's bookmarks. The bookmark manager **128** can perform the identification and authentication in numerous ways. For example, in one embodiment, the IP address is tracked throughout a session. In another embodiment, the authentication is done via a user manager system. In another embodiment, a cookie on the client **102***a* may include user-identifying information, which is supplied to the bookmark manager **128** by the client **102***a*.

The bookmark manager **128** then receives the URL for the site that the user identifies **204**. The bookmark manager **128** stores the URL, its rating(s), and its annotations) in the bookmark database **140** for later retrieval **206**. It is likely that a user already has a set of bookmarks (or several sets of bookmarks) that they would like to make available for their searches. Accordingly, in one embodiment, the bookmark manager **128** includes a mechanism for migrating that data to the bookmark database **140**. The hierarchy of bookmarks can be used as implicit annotations on the named URLs and can at least be preserved when synchronizing the bookmarks among browsers. In another embodiment, the full text of an article when it was last visited serves as an annotation of the URL. In still another embodiment, as bookmarks are edited on a supported browser's native interface, the corresponding edits are made to the server-side bookmarks.

In one embodiment, the bookmark manager **128** provides a server-side management tool via an HTML interface (which, again may mirror changes into a supported browser's native bookmarks). Synchronization of client and server-side bookmarks may increase adoption of the bookmark manager **128** if the user can at least manually synchronize server-side bookmarks into client-side browser bookmark lists. In one embodiment, the management tool also displays the bookmark rating for a given page and allows the user **112***a* to manipulate the rating and/or an annotation associated with the page. In another embodiment, bookmark manager **128** supports listing recently rated pages to facilitate returning to recently bookmarked pages, thus enabling a work-list like review of a surfing session.

Referring still to FIG. **2**, the bookmark manager **128** also receives **208** and stores **210** an annotation of the URL in the bookmark database **140**. The annotation is a remark that the user provides regarding the URL. The annotation may simply be a text string stored in a database **140** and associated with the URL. The annotation may be instead stored in a standardized format, see, e.g., *Annotea: An Open RDF Infrastructure for Shared Web Annotations*, J. Kahan, M. Koivunen, E. Prud'Hommeaux, and R. Swick (2001), In Proceedings of WWW10, May 1-5, 2001 Hong Kong.

In the embodiment shown, the bookmark manager **128** also receives **212** and stores **214** the rating of the site provided by the user **112***a* in the bookmark database **140**. For example, in one embodiment, the user **112***a* clicks a rating button. In response, the user **112***a* is presented with a series of ten radio buttons labeled 0.0 through 1.0. The user selects one of the radio buttons and clicks submit. The bookmark manager **128** receives the rating and the URL and saves the two data values in the bookmark database **140**. FIG. **2** is merely exemplary. In other embodiments the user may provide more or less information related to a site to the bookmark manager **128**.

Although in the embodiment shown, the reception and storage of the URL, annotation, and rating are shown as linear steps, they may be performed in other ways as well. For example, the bookmark manager may receive the URL, annotation, and rating together and perform one step to store them in the bookmark database **140**.

The data stored in the bookmark database **140** may be updated fairly frequently as pages are bookmarked (or the bookmark is toggled, or a rating slider is changed).

FIG. **3** is a flowchart illustrating a method of performing a network search in one embodiment of the present invention. Embodiments of the present invention may combine conventional network searches with, for example, personalized searches utilizing information provided by the user previously or in conjunction with the submission of the search. In the embodiment shown in FIG. **3**, the search engine **120** receives a query signal **130** from a client (**102***a*) **302**. The search engine **120** responds to the query signal **130** by performing a search. In the embodiment shown, the search comprises three sub-processes, which may be run in parallel. These three processes comprise: searching global indices **304**, searching the URLs stored as bookmarks **306**, and searching annotations **308**. Other embodiments may employ a fewer or greater number of sub-processes: For example, in one embodiment, the URLs present in the navigation history of the browser are searched.

Conventional search engines search global search objects, such as global search indices. Embodiments of the present invention are also capable of searching personal search objects, such as bookmarks, annotations, ratings, and other objects. In one embodiment, such searching comprises reading a list of URLs from the bookmark database **140**, and for each page, searching the various parts of the page using the

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search query **114** submitted by the user **112***a*. In another embodiment, an agent operating on the client **102***a* searches a personal search object stored on the client **102***a* or in a repository accessible to the client **102***a* via the network **106**.

Searching annotations comprises searching the user-entered annotations using the search query **114** submitted by the user **112***a*. For example, a user **112***a* may enter the term "boat" as an annotation for a page comprising marine supplies. If the users **112***a* enters "boat" as part of the search query **114** utilized by the search engine **120**, the page with the "boat" annotation will be returned by the search annotations component. Another embodiment of the present invention searches not only the pages that the user has bookmarked or annotated, but also pages similar to the pages that the user has bookmarked or pages with similar annotations.

Each of the sub-processes **304**, **306**, and **308** shown may generate a separate result set in the embodiment shown. In other embodiments, the sub-processes **304**, **306**, and **308** may be combined and/or configured to provide a combined result set automatically. The result sets may overlap to some degree. In the embodiment shown, the search engine **120** merges the search results into one list **310**. The search engine **120** then ranks the pages **312**. Various methods may be utilized to rank the pages. For example, the search engine **120** may rank results returned via annotation based on their user-based ratings, if any, then per the standard ranking algorithm. Several examples are set out below. The search engine **120** then provides a sorted result set **134** to the user **112***a* requesting the search **314**.

In another embodiment, the user supplies an annotation that is associated with a URL. The annotation is stored on a per-user basis to supplement the search results and to further improve scoring. Other users who share similar interests with the user who provided the annotation may use the annotation.

Embodiments of the present invention may make further use of the annotation. For example, in one embodiment, the search engine **120** searches for the keywords provided in a search query **114** in user-supplied annotations, e.g., treating those annotations as user-specific anchor text that refer to the annotated URL. The result set generated by a search engine in one such embodiment reflects the union of the global index and the results from the annotation keyword search.

Embodiments may also utilize other data, such as user ratings to determine the ranking of the results, to mark the results, or for other purposes. For example, in one embodiment, the page rankings that the search engine **120** provides are not affected by the user-supplied ratings for each page, but an indicator, such as an asterisk or other small image, identifies specific results that are rated based on ratings data stored in the bookmark database **140**.

Embodiments of the present invention may combine the results of several types of results, or may present the results separately. For example, in one embodiment, a user **112***a* submits a search query **114**. The search engine **120** searches a global search object and presents the results in one list. The search engine **120** also searches a personal search object and presents the results of the search in a second list.

In another embodiment of the present invention, the search engine **120** also uses a user-applied rating to rank the pages. For example, a user **112***a* applies a rating (e.g., between 0.0 and 10.0) to each of the bookmarks stored in the bookmark database **140**. The search engine **120** utilizes the user-applied rating in determining where in the result set **134** a particular article should be displayed. For, example, a rating of 0.5 might represent indifference, and lower ratings would penalize a result while higher ratings would make it score higher. In yet another embodiment, the search engine **120** more highly scores unrated pages that are similar to the content of highly rated URLs. In one embodiment, in which a large set of diverse user ratings and annotations have been stored, the search engine **120** may provide additional related features such as page suggestions based on similar users' ratings, e.g., via simple clustering approaches.

The term or alternate URL associated with the primary URL is a distinct token in the personalized search that indicates a desire of the user not to search for the term or navigate to the alternate URL, as would be the case in a conventional browser application, but instead to immediately go directly to a specific page that is associated with the term or alternate URL for the user **112***a*.

In one embodiment, a user **112***a* associates a specific term or alternate URL with a primary URL, such as the URL associated with a previously-stored bookmark in the bookmark database **140**. For example, the user **112***a* may enter a term in one text box and a URL in another text box and then click a button to associate the two. The association is then stored in a computer-readable medium on the client machine **102***a* or in a computer-readable medium accessible by a server **104**, such as in the bookmark database **140**. The term or alternate URL becomes a "speed-dial" navigation link to the URL. In one embodiment, the user **112***a* enters the term in a query search box and clicks a link or control, such as a standard search link or button, and, rather than performing a search for the term using a search engine, the browser or browser-enabled application retrieves the URL previously associated with the term and immediately jumps to the site associated with the URL. In another embodiment, a keyboard binding causes the browser to jump to the site associated with the URL. In either case, the command by the user **112***a* causes a behavior to occur that is personalized to the user as opposed to the conventional query behavior common to all users of the search engine. In other words, no search is performed; the browser simply navigates to the URL associated with the term in lieu of performing the search.

In yet another embodiment, the user **112***a* enters the alternate URL in the address field of the browser and clicks the "go" control or otherwise causes the browser to evaluate the alternate URL. Rather than navigating to the URL, the browser first searches for the alternate URL in the list of URL's associated with bookmarks. If the alternate URL is found, the browser navigates directly to the primary URL that is associated with the alternate URL.

For example, in one embodiment, a user **112***a* associates the term "home" with the user's corporate intranet page. The user **112***a* enters the term "home" in a text box and the URL for the corporate intranet page in another text box and clicks a control to associate the two. Alternatively, the user clicks a control during display of the corporate intranet page that provides the user **112***a* with an opportunity to associate the term and the page. Subsequently, the user **112***a* enters the term "home" in a search field and clicks the search control. Since the term "home" has been associated with the corporate intranet homepage, the browser immediately navigates to the user's corporate intranet homepage rather than executing a search for the term "home." The user **112***a* may want to select terms or phrases for association that are unlikely to be used in standard searches. For example, the user **112***a* may use a single number (e.g., "1") to associate with a URL.

In another embodiment, the user **112***a* associates the alternate URL "www.myhome.com" with the actual or primary URL for the user's **112***a* personal homepage. When the user **112***a* enters the URL "www.myhome.com" in the

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address line of the browser executing on the client **102***a*, the browser locates the association between the alternate and primary URL's and navigates to the page identified by the primary URL, the user's personal home page.

An embodiment of the present invention may provide various user interfaces. For example, in one embodiment, two distinct user interfaces are provided: one for novice users and one for advanced users. The novice interface may simply give visual feedback about whether a page is bookmarked or not and permits the user to toggle that state with a simple click. The richer, advanced-user interface may utilize a slider control reflecting a rating for the current page and a personality-mode (e.g., work/home/hobby) drop-down box that switches among different rating sets. Another embodiment includes an intermediate-level interface that includes a bookmark (vote positive) and a booknegate (vote negative) button (not unlike the voting buttons as part of the advanced features of some search toolbars, such as the Google Toolbar).

A user interface according the present invention may also include a personalized result page that includes a visual indication of a result that was reordered due to personalization. In one embodiment of the present invention, the user interface includes a means for toggling the personalization of results. For example, in one embodiment, the user clicks a button on the HTML interface to turn on personalization. If personalization is active, the user may click a button disabling personalization. Such a feature addresses the need to depersonalize results before sharing a query result links with other users (e.g., via email).

One embodiment of the present invention supports applying bookmarks directly via a results page. For more advanced users, bookmark manager **128** may support a "Rank these results" link that lets advanced users select a rating (perhaps using radio buttons) for each result on a given page. Because of privacy concerns, bookmark manager **128** may disallow access to "View bookmarks" to not-logged-in users; nevertheless, search results may be appropriately personalized based on just the cookie of not-logged-in users.

Embodiments of the present invention implement various measures to help encourage user adoption. For example, although not. all users may be willing to expend the effort to provide ratings, an embodiment of the present invention provides noticeable benefits for relatively low effort on the part of the user. In addition, by incorporating bookmark synchronization, an embodiment of the present invention helps drive adoption.

Embodiments of the present invention may also implement network and community features to foster adoption of the service. For example, as described above, an embodiment of the present invention may utilize like-user recommendations to locate and rank results. One embodiment of the present invention implements user groups and friend-lists whereby a user can choose to expose a bookmark list to friends or the public at large. In another embodiment, a user has the ability to transparently overlay a weighted set of bookmarks onto their own set of bookmarks.

An organization implementing an embodiment of the present invention may utilize partnerships to encourage adoption of the service. For example, a service provider may encourage partner sites to display a "bookmark this page!" snippet on their homepages and other content pages. For the partner, an embodiment of the present invention provides a means to ask users to opt-in to making it especially easy to get at their site via a search. And for users it's a nice reminder to mark the page or add an annotation. For the provider of the bookmark and search service, such an arrangement helps introduce users to the idea of bookmarks at the moment it matters most: when they are visiting a page they are interested in. It may be advantageous to (e.g., for security reasons) to have partners wishing to display a "bookmark this page!" link to register with the service provider first. Registration with the service provider also helps the service provider to develop relationships with additional content providers.

A provider of a bookmark service may receive various benefits from implementing the service. For example, the provider is able to collect data concerning users' attribution of value on pages.

One embodiment of the present invention utilizes an anti-spamming mechanism to avoid the problem of companies with a financial interest in driving traffic to their sites attempting to falsify end user interest in their pages. In one embodiment, the search engine **120** addresses this problem by not trusting the bookmark signal globally, but leveraging it only for user personalization. In one embodiment, the bookmark manager employs credit card validation (for identification only) and/or CAPTCHAs (Completely Automated Public Turing Test to Tell Computers and Humans Apart) to gain evidence that bookmark manager **128** is interacting with a legitimate user.

An embodiment of the present invention may provide other features as well. For example, one embodiment provides collaborative link recommendations. When logged in, a user **112***a* is provided a link with anchor text, such as "See related bookmarks for users similar to you." The linked page provides other suggested links that may be of interest to the user **112***a*. This feature may be integrated into or separate from the main results page.

An embodiment of the present invention may provide useful information to the provider of the bookmark service. For example, for sites that users visit most frequently, client-side bookmarks are often the tools of choice. An unfortunate consequence is that those page visits are largely hidden from the provider of a search service. With bookmarks being used as a navigational tool according to the present invention, the service provider has access to the previously unavailable data and may be better equipped to provide user-personalized portals. For example, pattern recognition might let the service provider realize that a user visit various stock quotes every Monday morning, checks CNN.com in the afternoons, etc. In such an embodiment, the search engine **120** may anticipate the pages that users will likely require.

An embodiment of the present invention may also improve the relevance of advertisements presented in conjunction with search results. For example, one embodiment of the present invention is able to use bookmarks to cluster user interests and leverage click-through data of various advertisements for similar users to present even more relevant advertisements. In other words, the advertisements are based, at least in part, on the search results returned based on the bookmarks or other personal search object. This feature provides numerous benefits. Not only are users more likely to be satisfied because the advertising is more targeted, but the click-through rate for the service provider may increase, resulting in increased revenue.

In one embodiment, a user may share or overlay bookmarks. For example in one embodiment, a user is able to open up their bookmarks for others to view. In another embodiment, a user is able to aggregate other users' bookmarks into their own set of bookmarks (either via copying or via an overlaid reference semantics). Such a feature may

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prove useful for community building (e.g., "Add this group's bookmarks to your favorites" when joining a new mailing list). In one such embodiment, the bookmark indicators in results pages distinguish between those pages explicitly bookmarked by the user from those gathered by others. Given a canonical URL through which to reference another individual/organization's bookmarks, the service provider can derive a sense of the popularity of a person's links and weight those bookmarks correspondingly (a la PageRank applied to the subgraph of bookmark interlinks).

One embodiment of the present invention fosters community and relationship building. In one embodiment, the search engine is able to recognize clusters or pairs of users having similar interests. Such an embodiment is able to suggest other users with which to network.

An embodiment of the present invention may include various other features as well. For example, in one embodiment, linger time and/or repeat visits is used to implicitly bookmark a page. Other implicit measures, such as the ones described above, may also be utilized. With this feature, a toolbar slider may start inching to the right as you view a given page (and should attempt to alert the user that the change has occurred, perhaps by flashing). The user explicitly dragging the slider would override the setting (and turn off the implicit rating improvement for this visit to the site).

FIG. **4** is a flowchart illustrating a process of implicitly rating a page in one embodiment of the present invention. In the embodiment shown, the bookmark manager **128** receives a URL **402**. The bookmark manager **128** determines whether or not the URL has been saved as a in the bookmark database **140** as a bookmark **403**. If so, the process ends **414**. Otherwise, the bookmark manager **128** determines whether this is a first visit by the user to the URL **404**. If so, the bookmark manager adds the bookmark to the bookmark database **140** and sets the rating equal to 0.5 **408**. The process then ends **414**. In the embodiment shown, the bookmark manager **120** does not identify the URL as a bookmark, but merely adds an entry to maintain the rating of the site.

If the bookmark has been visited before, the bookmark manager **128** adds 0.05 to the value of the rating **406**. Once the rating has been set or adjusted, the bookmark manager **128** determines whether the rating is greater than or equal to 0.7 **410**. The value 0.7 is a threshold for implicitly creating a bookmark and may be adjusted in various embodiments. If the value is greater than or equal to 0.7, the bookmark manager **128** marks the URL as a favorite in the bookmark database (**140**) **412**. The process then ends **414**. If the value is less than 0.7, the process ends, and the bookmark is not added to the bookmark database **140**. Another embodiment of the present invention utilizes linger time in addition to or instead of page visits for implicitly bookmarking pages.

An embodiment of the present invention may use the ratings, annotations, or any other data in presenting search results. In several of the examples described above, the data is used to sort or mark search results shown to a user **112***a*. In one embodiment, the data is used to exclude search results from those shown to the user.

Embodiments of a rating process according to the present invention may provide other features as well. For example, one embodiment provides the capability to search previously stored bookmarks as a completely separate search experience rather than integrating the results into the basic results page. In one such embodiment, the interface on the client **102***a* presents the user with two checkboxes. By checking the first checkbox, the user **112***a* specifies that the search engine **120** should search global indices. By checking the second checkbox, the user **112***a* specifies that the search engine **120** should search the user's bookmarks. The user **112***a* is able to vary the search based on the particular type of search that the user **112***a* wishes to perform. In another embodiment, hits due to indexed annotations are presented separately at the top, and hits due to results that were otherwise found are marked in their usual ranking position and may also be shown at the top. The links presented at the top of the result set **134** may not include snippets.

To mitigate privacy concerns, embodiments of the present invention may require users to opt-in to the tracking. In such an embodiment, the system alerts the user when personalized search is in effect and provides a simple mechanism for reverting to generic search. In such an embodiment, bookmark data may be stored in a secure data center separate from a user's other personal data.

Various interface designs may be implemented in an embodiment of the present invention. For example, in one embodiment, marking of pages of interest and non-interest is provided via JavaScript bookmarklets. One such embodiment displays the user-specified ranking (if any) by usurping the PageRank display to be user-specific. The color changes when the bookmark rating exceeds the mark threshold (0.7 in FIG. **3**).

In another embodiment of a user interface according to the present invention, the user is provided with a simple user interface for adding an annotation for an arbitrary page, such as via a new menu option in the toolbar's Info drop-down or via a star button in the browser or a toolbar or a plug-in of the browser. The bookmarked or booknegated pages in results sets are displayed and the bookmarks and booknegates may be edited directly in the results list.

In the embodiment shown in FIG. **1**, client **102***a* transmits query signal **130** to the server device **104** executing the search engine **120**. In another embodiment, the server device **122** executing the bookmark manager **128** may receive queries directly. In one such embodiment, seven queries are defined to retrieve and/or save various pieces of data. In each of the queries, the user identifier is provided as a primary identifier.

In a first query, a user provides a rating of a page. The rating may be a simple yes/no or up/down rating or may include a rating across a scale. The response may just be the new bookmark rating (for example, as an ASCII-encoded integer). For a query implementing an up/down rating, the rating may be boosted or dropped slightly along a scale. An example of a rating query is:

GET/set-bookmark?rating=NUM&url-URL&annotation=ANNOTATION.

In a second query, information for new pages visited by the user is requested. Such a query may include a features parameter, which may be extended to explicitly ask for bookmark ratings. The response may be something like: "Rank_I:1:8." One example of such a query is:

GET/search?client=navclient-auto&q=info:URL.

In a third query, a bare bookmark rating is requested for a set of documents. In the query shown, the URLLIST is a list of URLS, separated by spaces, re-urlencoded, and DocIds is a space-separated list of docids, url-encoded. Results for all of these are returned, one per line. One example of such a query is:

GET/get-bookmarks?urls=URLLIST&docids=DOCIDLIST.

In a fourth query, an annotation for a URL is requested. In one embodiment, when the URL is not specified, the server returns a list of URLs that have bookmark annotations in a

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HTML user interface that permits a user to view and edit those annotations. One example of such a query is

GET/annotations?ur1=URL.

A fifth query transmits a list of bookmarks to a server. One example of a bookmark POST acceptor is as follows:

POST/set-bookmarks.

In the POST acceptor query, the POST-data may have a Content-Type of "text/html" and be a favorites list represented in HTML, for example, in the format Microsoft Internet Explorer™ exports.

A sixth query provides a means to get a full bookmark list in XML format. One such query is as follows:

GET/get-bookmarks.xml.

A seventh query provides a means for searching an annotation and returning URLs or Docids that match the query terms provided in the query. One such query is as follows:

GET/search-annotations?q=QUERYTERMS.

Embodiments of the present invention provide numerous advantages to the user and to the provider of the search service. An embodiment of the present invention improves the user experience by providing personalized search results and rankings.

An embodiment of the present invention provides advantages to the provider of a search service by (1) increasing the stickiness of the search experience by giving users a compelling reason to identify themselves and share their interest in topics with the provider, and (2) gathering better data regarding the relevancy of pages to different users and different classes of users.

In an embodiment of the present invention, the user providing bookmarks to the service provider enables the search provider to personalize the search for them. The feature can be viewed as a server-side generalization of bookmarks integrated with annotations. Users are able to share that personalization data across different browsers (e.g., work and home) if desired and hence eliminate the drudgery associated with managing bookmarks. An embodiment of the present invention also unifies all navigational queries under a single experience.

The foregoing description of the preferred embodiments of the invention has been presented only for the purpose of illustration and description and is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Numerous modifications and adaptations thereof will be apparent to those skilled in the art without departing from the spirit and scope of the present invention.

What is claimed is:

1. A computer-implemented method performed by at least one processor, the computer-implemented method comprising:

identifying a user;

receiving user input from the user through an interface of a client device, the user input indicating a modification to a set of favorite items for the user;

in response to receiving the user input:

modifying the set of favorite items stored for the user in a client-side storage of the client device, the modification to the set of favorite items initiating a synchronization process to synchronize the set of favorite items modified responsive to the user input with a server-side storage system configured to synchronize favorite items for the user with one or more other client devices, the server-side storage system remote from the client-side storage;

presenting through a single interface of the client device, in response to a query from the user, a combined search results set generated via one or more search subprocesses, the combined search results set including at least two of:

one or more favorite items from the set of favorite items synchronized for the user;

one or more search results from a first global index; or

one or more search results from a second global index.

2. The computer-implemented method of claim **1**, wherein the client device comprises at least one of a digital assistant, a smart phone, a digital tablet, a laptop computer, or an Internet appliance.

3. The computer-implemented method of claim **1**, wherein the set of favorite items comprises an identifier to a resource.

4. The computer-implemented method of claim **1**, wherein the set of favorite items comprises an identifier to an audio file.

5. The computer-implemented method of claim **1**, wherein the set of favorite items comprises an identifier to an audio file that is accessible via a network.

6. The computer-implemented method of claim **1**, wherein the user input indicating the modification to the set of favorite items for the user comprises an indication to create a favorite item to add to the set of favorite items for the user, the computer-implemented method comprising:

adding the favorite item to the set of favorite items in the client-side storage of the client device; and

adding the favorite item to the set of favorite items in the server-side storage system.

7. The computer-implemented method of claim **1**, comprising:

adding a favorite item to the set of favorite items stored on the one or more other client devices.

8. The computer-implemented method of claim **1**, wherein the user input indicating the modification to the set of favorite items for the user comprises an indication to delete a favorite item from the set of favorite items for the user.

9. The computer-implemented method of claim **1**, comprising:

deleting a favorite item from the set of favorite items in the client-side storage of the client device;

deleting the favorite item from the set of favorite items in the server-side storage system; and

deleting the favorite item from the set of favorite items stored on the one or more other client devices.

10. The computer-implemented method of claim **1**, comprising:

storing the set of favorite items in a bookmark file on at least one of the client-side storage of the client device, the server-side storage system, or a second client device of the one or more other client devices.

11. The computer-implemented method of claim **1**, wherein the interface of the client device through which the client device receives the user input comprises a built-in interface of a client-side application.

12. The computer-implemented method of claim **1**, wherein the interface of the client device comprises a pop-up window.

13. The computer-implemented method of claim **1**, comprising:

providing, by an application, via the client device, the interface through which the user provides the user input.

14. The computer-implemented method of claim **13**, wherein the application comprises at least one of a manager,

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HTML-based application, JavaScript-based application, an ActiveX component, a Java applet, or a C++ program.

15. The computer-implemented method of claim **1**, wherein the client device is associated with a valid user identifier and the one or more other client devices are associated with the valid user identifier.

16. The computer-implemented method of claim **1**, comprising:

authenticating, via a user identifier, the client device for synchronization of the set of favorite items;

authenticating, via the user identifier, the one or more other client devices for synchronization of the set of favorite items; and

subsequent to authenticating the one or more other client devices for synchronization of the set of favorite items, synchronizing the set of favorite items among the one or more other client devices.

17. A system to synchronize bookmarks among devices, comprising:

a first client device comprising one or more processors and memory, the first client device comprising a first application program stored in the memory of the first client device and executed by the first client device; and

a second client device comprising one or more processors and memory, the second client device comprising a second application program stored in the memory of the second client device and executed by the second client device,

wherein the first application program of the first client device is configured to:

authenticate with a server for synchronizing with a set of bookmarks stored in a server-side storage of the server;

receive an input via an interface of the first client device, the input comprising an instruction to the first client device to modify a set of bookmarks stored in a client-side storage of the first client device, the client-side storage remote from the server-side storage; and

transmit, from the first client device and to the server, an indication to modify the set of bookmarks stored in the server-side storage, and

wherein the second application program of the second client device is configured to:

authenticate with the server for synchronizing with the set of bookmarks stored in the server-side storage of the server;

receive, at the second client device and from the server, an indication to modify a set of bookmarks stored in a client-side storage of the second client device, the client-side storage remote from the server-side storage;

modify, responsive to the indication to modify the set of bookmarks received from the server, the set of bookmarks stored in the client-side storage of the second client device; and

present through a single interface of the second client device, in response to a query from a user, a combined search results set generated via one or more search sub-processes, the combined search results set including at least two of:

one or more favorite items from the set of bookmarks synchronized for the user;

one or more search results from a first global index; or

one or more search results from a second global index.

18. The system of claim **17**, wherein the set of bookmarks stored in the server-side storage of the server comprises one or more favorite items, wherein the set of bookmarks stored in the client-side storage of the first client device comprises the one or more favorite items, and wherein the set of bookmarks stored in the client-side storage of the second client device comprises the one or more favorite items.

19. The system of claim **17**, wherein the set of bookmarks stored in the server-side storage of the server comprises one or more identifiers of one or more audio files, wherein the set of bookmarks stored in the client-side storage of the first client device comprises the one or more identifiers of the one or more audio files, and wherein the set of bookmarks stored in the client-side storage of the second client device comprises the one or more identifiers of the one or more audio files.

20. The system of claim **19**, wherein the second client device is further configured to:

display, via an interface of the second client device, an indication of modification of bookmark information for at least one of the one or more audio files identified by the set of bookmarks stored in the client-side storage of the second client device.

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CERTIFICATE OF COMPLIANCE

The foregoing brief complies with the relevant type-volume limitation of the Federal Rules of Appellate Procedure and Federal Circuit Rules because:

> The brief has been prepared using a proportionally spaced typeface and includes 8,551 words, excluding the parts of the brief exempted by Fed. R. App. P. 32(f) and Fed. Cir. R. 32(b).

Date: May 8, 2023

/s/ Erika H. Arner
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